TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XXIV., Part I.

EDITED BY PROFESSOR R. TATE.

ISSUED AUGUST, 1900.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

Geological Notes on the Cliffs Separating Aldinga and Myponga Bays.

By Edward Vincent Clark, B.Sc.

[Communicated by Prof. Tate.]

[Read November 7, 1899.]

Travelling southwards along the coast from the Port Willunga Jetty, the Eocene and overlying Miocene both dip downwards, and after a mile or so the Eocene disappears beneath the sand strand ; about half a mile further on the Miocene also reaches to sea-level. Both sets of beds are last seen as reefs between low and high water, but as the dip of the Miocene is the smaller, the reef formed by it is much larger than that of the Eocene, extending a considerable distance both seawards and southwards on the shore, and also a good deal further below sea-level. It is last seen about two miles from Port Willunga Jetty, but is visible somewhat further if the sand has been swept by a storm.

The Post-miocene clays which cap the cliffs then gradually give way to sandhills, which are well overgrown and contain a good percentage of calcic carbonate. The beach is broad, and above ordinary high tide is a bank of shingle, increasing in size as we go south, while the sandhills become smaller. Two miles (roughly) from where the Miocene reef disappears these are no longer covered with vegetation, and behind them is a lagoon in a basin that was formerly an arm of the sea, but which has been reclaimed by the shingle drifting up from the south and the sediment washed down from the Sellick's Ranges. This lagoon is now fresh water, or only slightly brackish when full, but dries up nearly every summer. Dead shells of *Coxiella confusa* are in profusion in the silt.

From this point the sandhills give place to a clayey deposit, still flanked by the bed of shingle (which is much coarser here), and rising somewhat rapidly in height—about one foot per chain. This clay bears a considerable likeness to the mottled clays overlying the Miocene at Blanche Point and the jetty, with the exception that it contains a vast amount of gravel, arranged in more or less horizontal layers. This gravel is mainly of quartzite, shale, and ironstone ; and the pebbles are only slightly worn—most with the corners just taken off, but many quite angular, and a few well-rounded. Owing to the amount of gravel in this clay it will stand at a great inclination, and being by no means in

durated the wash of water has cut it into huge pinnacles, with sides nearly, if not quite, vertical. Where there happens to be little or no gravel, it stands at a much lower angle, and it is in such places that the resemblance is seen to the clays further north. This clay is well seen for upwards of two miles, and before losing its distinctive character, where the Cambrian limestones begin, attains a height of 150 feet or more. Beyond this the clays do not form the escarpment, and so are not prominent, being seen occasionally at the top of the cliffs. As the ground slopes almost without a break from the top of the escarpment to the Sellick's Ranges, these clays must be of immense volume.

Some five and a half miles south of the jetty—a mile south of where these clays first replace the sandhills—is seen a small patch of Eocene polyzoal limestone at their base. This bed is never visibly above 20 feet in height, and is about 600 yards long in all. It is largely worn away at the base, and owing to this its thinness and the weight of the overlying clays—here 80 to a 100 feet in height—it is greatly broken about. The result is that the dip of the bed is hard to estimate, but seems to be five to seven degrees to the south. That the dip is low is shown by the fact that a small extension of this bed as a reef presents a nearly flat surface, not a series of ridges, as is the case further south.

This limestone is of a distinct yellowish tinge, and very pure, over 90 per cent. being soluble in acid, the balance being clay, not sand. It is made up almost entirely of polyzoa, with a fair number of other fossils, but most in such fragments as to be unrecognisable, or at any rate not in a condition to be removed from the rock, which is extremely friable, crumbling under very little pressure. It is greatly undermined by the sea, which reaches it whenever the tide is higher than usual. The reef is, of course, much more indurated, or it could not exist.

For three-quarters of a mile further after the last of this limestone the clays form the escarpment, owing to their easy erosion somewhat back from the beach, and then Cambrian makes its appearance—mainly shale at first. The Cambrian strata here dip at an angle of 75° to the north-west, but the inclination is not well-shown, as, while the coast faces about west, the escarpment is irregular, sloping back from the beach, and somewhat overgrown; also devoid of distinct bands.

Up to this point the coast has run pretty consistently north and south, there being a slight bay from the Miocene reef southwards. Here it takes a sharp turn towards the west, and is henceforth very irregular. There is practically no more beach, the shore-line being either a reef or else piled up with detached boulders, with sometimes a few feet of sand interspersed with rocky debris at the foot of the escarpment.

Three hundred yards further on Eocene again appears overlying the Cambrian. It is here, however, much inclined, dipping to the N.N.W. at an angle of 50° at first, increasing to 65°, and finally diminishing to 45°. It extends seawards for a short distance as a reef, but owing to the high dip it is of no great breadth. Due, however, also to the great inclination, it is extremely regular, and for a 150 yards or so where the cliffs take a bend and run approximately parallel to the direction of strike (W.S.W.) it consists of a series of ridges, parallel to each other and to the shore. One ridge in particular, though only two feet wide, is so uniform that it was keeping the sea inside at a height of 15 to 18 inches higher than outside. In this the reef is very different to that at the small patch of Eocene rocks to the north, and to the reefs south of the Port Willunga Jetty and at Blanche Point. In these cases, where the dip of the rocks is low, the reef either presents a fairly level surface or, if the rock is not quite uniform, a labyrinthine outcrop, the projecting lines of greatest resistance to wear turning and twisting about extremely irregularly, as is so well seen in the Miocene reef at Schnapper Point, south of Port Willunga Jetty.

Opposite to these ridges the face of the cliff is peculiar; as it is approximately parallel to the line of strike, one would expect it to reveal the strata in horizontal bands, but, again owing to the high dip, every projection of a few feet causes a considerable depression in the position of the band on the face of the cliff, and in the same way every recession of a few feet causes a corresponding elevation. The result is that, seeing the escarpment here alone, one would go away with the impression that the strata were highly contorted.

These Eocene beds reach to a considerable height—at their southern extremity over a hundred feet; but are not so high further north.

The lithological character is considerably different from that of the bed before mentioned (though containing pretty much the same fossils), and approaches more nearly to that of the Eocene to the south of the Port Willunga Jetty. The rock is not nearly so full of polyzoa, and yields only 60-70 per cent. soluble in acid, the balance being partly sand, partly clay. It is also more indurated, in places being very hard. Here again fossil collecting is of very little use, everything being broken, and obtainable in fragments only.

After being absent from the face of the cliff for about three-quarters of a mile, the Cambrian again is seen at the foot of the escarpment beneath the Eocene, which extend for about a 100 yards further, their last appearance in the cliff being at an altitude of over a 100 feet. The Eocene reef extends for perhaps a

150 yards more, but after that, as far as I was able to go (about four miles measured along the coast, though much less as the crow flies) no more was visible

The cliffs here, at the end of the Eocene, are of great height, but it is hard to say exactly what. The top of the escarpment is not well defined, and from there the ground slopes directly up to the Sellick's Ranges. Quite close to the cliff, though not right at its edge, I was at an elevation of a 180 feet.

The Cambrian near here dips at an angle of 65° to 70° to the north, the westerly strike being very clearly shown by the bands of quartzite standing out on a small reef at the foot of the escarpment. This reef protects the cliff from the sea's action, and therefore there is here very little loose rock on the shore-line, and the high-water mark is shown by a line of sand some 20 feet wide. Further south the inclination is greater, but still in the same direction. Here the rocks dip at an angle of 75° at the top of the escarpment (here a 100 feet high), and at the base they are vertical or even slightly inclined in the opposite direction, though but a very small part shows this inversion. A little further still the dip is 80°, and strike (as shown by the reef on the beach) W. by S. This reef extends very little further—less than three-quarters of a mile altogether—and after that the beach, or rather the shore-line, presents a tangled mass of boulders. These are some of quartzite, well-rounded, and very smooth; some of a calcareous nature, worn into sharp spikes and projections, painful to walk on; and others, which present the most peculiar appearance, composed of black ferruginous dolomite, which wears away along the lines of stratification into amygdaloidal holes, into which pebbles have often been forced, and too coarse to be seen in hand specimens. This rock does not appear on the face of the cliff, but is very plentiful on the shore-line, not only along here, but also right back to where the Cambrian first appears. Masses of ironstone are also to be met with occasionally.

After the end of the Cambrian reef the cliffs are not nearly so fine, seldom presenting a bold escarpment to the sea, but sloping back somewhat, with frequently a surface coating of clayey soil carrying vegetation. The rock itself, which crops out frequently, also becomes more calcareous in nature. The dip is, therefore, hard to obtain, as even where a fair section is shown there is no reef to show the strike, which is highly important with such a great dip. Occasionally, where the cliff slopes back more than usual, the shore-line becomes more pebbly, with fewer great boulders; and in a few spots a small patch of sand was to be met with. Also, at intervals, there is a jutting point of rock extending right up to the sea, making it difficult to pass, and this appeared to be more frequently the case towards Myponga.

The cliffs here, as mentioned above, are more calcareous than further north (especially the jutting points), where they are mostly pink, purple, brown, or black shales, with bands of quartzite, highly coloured by iron. It is by these quartzite bands that the dip is most apparent, the shales showing stratification lines very poorly.

The following are the distances of the various distinctive points of the coast from the Port Willunga Jetty, as measured by cyclometer :—

	Distance S. of Port Willunga Jetty.	
End of Miocene reef	(say) 2 miles	
End of thickly-clothed sandhills ...	4 "	
Beginning of gravelly clays	$4\frac{1}{2}$ "	
Appearance of Eocene rocks ...	$5\frac{1}{2}$ "	
Disappearance of Eocene rocks ...	$5\frac{7}{8}$ "	
Appearance of Cambrian	$6\frac{5}{8}$ "	
Disappearance of Cambrian and reappearance of Eocene (here highly inclined)	$6\frac{3}{4}$ "	Estimated only.
Reappearance of Cambrian	$7\frac{1}{2}$ "	Estimated only.
Final disappearance of Eocene ...	$7\frac{5}{8}$ "	Estimated only.
End of Cambrian reef	$8\frac{1}{4}$ "	Estimated only.

As mentioned before, fossils are very difficult to collect, owing to their being nearly all in fragments. The following, however, I have identified :—

From the first Eocene bed (of low inclination)—

Cidaris sp.
Lovenia Forbesii, *Ten.-Woods.*
Scutellina patella, *Tate.*
Fibularia gregata, *Tate.*
Antedon pertusa, *Tate,* m.s.
Waldheimia sp. (indet.).

From the second Eocene bed (of high inclination)—

Cidaris sp.
Echinus Woodsii, *Laube.*
Lovenia Forbesii, *Ten.-Woods.*
Fibularia gregata, *Tate.*
Echinolampas posterocrassus, *Gregory.*
Pecten consobrinus, *Tate.*
Waldheimia sp. (indet.).

New Micro-Lepidoptera—mostly from Queensland.

By A. Jefferis Turner, M.D., F.E.S., Brisbane.

[Read December 5, 1899.]

XYLORYCTIDÆ.

This family is now merged by Mr. Meyrick in the *Gelechiadæ*, but as the Australian *Gelechiadæ*, with the exception of this section, have not yet received systematic treatment, it is convenient to retain the above designation for the present. The present contribution is supplementary to my paper on the "Queensland *Xyloryctidæ*," in the Annals of the Queensland Museum, No. 4, 1897.

PILOSTIBES, *Meyr.*

Forewings with veins 7 and 8 stalked or coincident, 7 to costa.

On reconsideration, I have determined to retain this genus, altering the definition as above, and regarding *P. enchidias*, Meyr., as the type; referring *P. stigmatias*, Meyr., to *Xylorycta*.

Pilostibes trachyptera, *n. sp.*

Female, 40 mm. Head brown-whitish. Palpi brown-whitish; terminal joint and apex of second joint white. Antennæ grey. Thorax brown-whitish. Abdomen whitish. Legs brown-whitish; anterior tibiæ and tarsi much thickened with scales. Forewings posteriorly dilated, costa rather strongly arched, apex round-pointed, hindmargin straight, slightly oblique; veins 7 and 8 coincident; brown-whitish, suffused with reddish-brown and fuscous-brown, with five or six tufts of raised scales; a dark-fuscous oblique mark on costa at one-fourth; paler fuscous marks on costa at middle, three-fourths, and two more between last and apex; an ill-defined blackish streak in disc above middle, and several fine blackish streaks along veins in posterior portion of disc; cilia brown-whitish, with an incomplete darker basal line. Hindwings brown-whitish; cilia whitish, at apex pale fuscous.

A very distinct species, apparently referable here, but the male is wanted to establish this with certainty. The raised tufts of scales on forewings are a peculiar character.

Palmwoods, Queensland (60 miles north of Brisbane); one specimen taken by Mr. R. H. Relton.

Cryptophaga balteata, *Walk.*

Male. *Zitna balteata*, Walk., Suppl., 1841.

Female. *Cryptophaga lurida*, Meyr., Proc. Roy. Soc., S.A., 1890, p. 37.

Both sexes *Cryptophaga acroleuca*, Turner, Annals Queensland Museum, 1897, p. 8.

I am indebted to Mr. Meyrick for this synonymy.

Cryptophaga opalina, *n. sp.*

Antennal pectinations in male extremely short (one-half), cilia in tufts from pectinations. Veins 6 and 7 of hindwings separate, but closely approximated at base.

Male, 29 mm. Head white. Palpi white; base of second joint fuscous externally. Antennæ dark-fuscous, with a few scattered whitish scales; basal joint white. Thorax white, with a few scattered dark-fuscous scales in patagia, and a large posterior dark-fuscous spot with purple reflections. Abdomen whitish; bases of segments partly ochreous-brown. Legs white; anterior and middle tibiæ and tarsi dark-fuscous, annulated with white. Forewings elongate-oblong, costa slightly arched, apex rounded, hindmargin scarcely oblique, rounded beneath; white; a moderately broad fascia from costa near base, narrowing to inner-margin at one-fourth, produced along costa to base, near costa grey, thence dark-fuscous with purple reflections; an incomplete interrupted line posterior and parallel to this, dark-fuscous with purple reflections; a large fascia from costa before middle, much dilated in disc and on inner-margin, on costa and on posterior margin grey, the remainder a medley of dark-fuscous with purple reflections, ochreous-brown, and white scales; a broad grey line parallel to hindmargin; separted by a fine white line from a broad grey line on margin; cilia dark-fuscous, with a narrow basal white line, at anal angle wholly white. Hindwings grey; towards inner-margin whitish; cilia white, with a basal grey line along anterior half of hindmargin and around apex.

A very distinct and highly beautiful species. The extremely short antennal pectinations render it difficult to distinguish from *Lichenaula*.

Brisbane, Queensland; one specimen at light in November.

Xylorycta assimilis, *n. sp.*

Female, 26 mm. Head white, side tufts and face ochreous-tinged. Palpi whitish ochreous; second joint with a few dark-fuscous scales; terminal joint whitish. Antennæ whitish-ochreous, annulated with dark-fuscous; base of first joint dark-fuscous on upper surface. Thorax white, anteriorly

ochreous tinged. Abdomen whitish-ochreous. Legs ochreous; anterior pair infuscated. Forewings elongate-oblong, costa moderately arched, apex round-pointed, hindmargin straight, oblique; snow-white; costal edge pale-ochreous throughout; a faint ochreous suffusion at anal angle; cilia wholly pale-ochreous. Hindwings whitish-ochreous; apical portion of disc greyish-tinged; cilia pale-ochreous.

This resembles and might be mistaken for *Neodrepta (Xylorycta) luteotactella*, Walk., but may be at once distinguished by the neuration, vein 8 of forewings running to costa, and not to hindmargin, as in that species. It also differs in the absence of orange coloration of face and palpi, and in the ochreous hindwings.

Sydney, New South Wales; one specimen taken in October by Mr. G. Lyell. The type is in his collection.

XYLORYCTA ACROCHROA, *n. sp.*

Female, 20 mm. Head and thorax snow-white. Palpi white. Antennæ whitish-ochreous; basal joint white. Abdomen whitish. Legs whitish-ochreous; posterior tibiæ and tarsi white. Forewings elongate-oblong, costa slightly arched, apex round-pointed, hindmargin straight, oblique; snow-white; a narrow ochreous streak along costa from before middle to three-fourths, slightly broader towards apex, where it ends in a short, very oblique fuscous streak; a small triangular orange-ochreous spot on costa just before apex, bounded beneath by a fuscous line; cilia snow-white, at apex tipped with fuscous, and with a dark-fuscous bar at one-third. Hindwings whitish grey; cilia white.

Conspicuously distinct among the species with white forewings by the apical markings.

Mount Tambourine (1,800 feet), Queensland; one specimen in November.

ZAUCLOPHORA, *n. g.*

Head smooth. Tongue moderate. Antennæ moderate, in male shortly bipectinated throughout, basal joint moderate without pecten. Labial palpi very long, recurved ascending, second joint much exceeding base of antennæ, terminal joint shorter than second, acute. Maxillary palpi very short, appressed to tongue. Thorax smooth. Abdomen moderate. Anterior and middle tibiæ smooth-scaled, posterior tibiæ rough-haired. Forewing with vein 2 from two-thirds, 7 and 8 stalked, 7 to hindmargin, 8 to apex, 11 from middle. Hindwings over 1, veins 3 and 4 short-stalked, 5 parallel, 6 and 7 approximated at base.

A development of *Lichenaula*, from which it is distinguished by the pectinated antennæ of the male. From *Cryptophaga* it differs in the much longer palpi, more slender abdomen, and smoother anterior and middle tibiæ.

ZAUCLOPHORA PELODES, *n. sp.*

Male, 23 mm. Head and thorax ochreous-brown. Palpi dark-fuscous; posterior aspect whitish-ochreous. Antennæ dark-fuscous. Abdomen reddish-ochreous; apices of segments whitish-ochreous. Legs whitish-ochreous; first two pairs dark-fuscous anteriorly. Forewings elongate, costa moderately arched, apex rounded, hindmargin slightly rounded, oblique; ochreous-brown, with ill-defined ochreous-whitish markings; an ochreous-whitish suffusion in disc; an outwardly curved line from costa at two-thirds to anal angle; two ochreous-whitish spots at and before apex, separated by a fuscous spot; hindmargin and anal angle irrorated by fuscous scales; cilia ochreous-whitish, irrorated with fuscous. Hindwings fuscous; towards base suffused with ochreous; cilia whitish-ochreous, with a faint fuscous line at apex and at anal angle.

The type is in poor condition, but the species is a very distinct one.

Brisbane, Queensland; one specimen received from Mr. H. Tryon.

LICHENAULA AMBLYGONA, *n. sp.*

Female, 28 mm. Vein 7 of forewings to hindmargin. Head white. Palpi white; terminal joint mostly fuscous internally. Thorax fuscous, irrorated with white scales. Abdomen ochreous-fuscous. Legs whitish, irrorated with fuscous, except posterior tibiæ. Forewings dilated posteriorly, costa strongly arched, apex round-pointed, hindmargin sinuate; white rather densely irrorated with fuscous; a triangular fuscous suffusion on inner-margin before middle; a short longitudinal suffused mark in disc before middle; a very distinct outwardly oblique line from costa at two-thirds, angulated in disc, and continued parallel to hindmargin to inner margin at three-fifths; an indistinct suffusion on middle of hindmargin; cilia fuscous, at apex white, at anal angle with white apices. Hindwings pale-grey, towards base whitish; cilia grey.

Distinguished from the other species with an angulated posterior line—*L. oxygona*, Luc.; *L. goniodes*, Turn., and *L. micradelpha*, Turn., by the fuscous thorax.

Brisbane, Queensland; one specimen taken by Mr. F. P. Dodd. I am indebted to Lord Walsingham for permission to describe this species, of which the type is now in his collection.

LICHENAULA INSCRIPTA, *Turn.*

Annals Queensland Mus., 1897, No. 4, 21.

Male, 19 mm. Head and thorax white. Palpi white, apex of second joint slightly fuscous-tinged. Antennæ dark-fuscous. Abdomen fuscous; first two rings and apices of segments white;

tuft ochreous-whitish. Legs whitish; anterior pair fuscous. Forewings elongate, costa moderately arched, apex rounded, hindmargin sinuate, moderately oblique; white; markings fuscous; costal edge dark-fuscous towards base, thence ochreous-tinged; a dot on fold at two-fifths; two small dots placed transversely in disc at two-thirds, an outwardly oblique line from costa at two-thirds, narrowing in disc, abruptly bent, and continued suffusedly to anal angle; three dots on apical third of costa; a suffused hindmarginal line, leaving hindmarginal edge white; five or six fine blackish lines, parallel to veins, running into hindmargin; cilia fuscous, darker at apex, with an indistinct whitish median line. Hindwings grey, towards base and at apex whitish; cilia whitish.

Female, 26 mm. Abdomen wholly whitish. Forewings with angulated line replaced by a broad fuscous suffusion, prolonged along fold towards base, its posterior edge sharply defined.

Differs from *L. oxygona*, Luc., by the ground colour not being greyish, and by the numerous longitudinal blackish lines running into hindmargin; also by the dot on fold. Its place in my tabulation should be altered accordingly.

The type was wasted. I have since taken a very perfect male on Mount Tambourine (1,800 ft.), Queensland, in November, and have recived a female taken at Brisbane from Mr. H. Tryon.

Lichenaula tholodes, *n. sp.*

Female, 18-21 mm. Head, thorax, and palpi purplish-fuscous, irrorated with whitish; internal surface of palpi mainly whitish. Antennæ dark-fuscous. Abdomen grey; tuft whitish. Legs whitish; anterior femora, and anterior and middle tibiæ dark-fuscous, irrorated with whitish: anterior tarsi dark-fuscous, with whitish annulations. Forewings oblong, costa moderately arched at base, thence nearly straight, apex rectangular, hindmargin slightly sinuate, scarcely oblique; purplish-fuscous, densely irrorated with whitish, less so along a line from base to anal angle: cilia fuscous. Hindwings with hindmargin sinuate beneath apex; grey; cilia pale-grey, with a darker basal line.

Allied to *L. ignota*, Turn., from which it differs in the purplish-fuscous colouring and absence of markings.

Brisbane, Queensland; two specimens taken at light in January and March.

Maroga mythica, *Meyr.*

Maroga undosa, Lucas, Proc. Linn. Soc., N.S.W., 1893, p. 164.

I sent a specimen of Lucas' species to Mr. Meyrick, who informs me that it is identical with his own.

Eschatura lemurias, *Meyr.*

Meyrick, Trans. Ent. Soc., 1897, p. 382.

Phlæophora codonoptera, Turner, Annals Queensland Museum, 1897, p. 23.

Mr. Meyrick's name has a few weeks' priority. Whether my *Phlæophora lactea* is referable to the same genus must be left undecided until the male is discovered.

Procometis hylonoma, *Meyr.*

Procometis acompta, Turn. Annals Queensland Museum, No. IV., p. 30, and *Procometis heterogama*, Lower, Proc. Linn. Soc., N.S.W., 1899, p. 103, are identical with this species.

Brisbane, Stradbrooke Island, and Warwick, Queensland; Broken Hill, New South Wales. Probably, therefore, a species of very wide distribution. Meyrick records it from Sydney and Bathurst, New South Wales; and Kangaroo Island, South Australia.

Agriophara nodigera, *n. sp.*

Female, 18 mm. Head, thorax, palpi, and antennæ ochreous-whitish, irrorated with fuscous. Palpi very short, not reaching halfway to base of antennæ, terminal joint minute. Abdomen ochreous-fuscous. Legs whitish, sparsely irrorated with fuscous; tarsi and anterior tibiæ annulated with fuscous. Forewings elongate-oval, costa moderately arched, apex rounded, hindmargin very obliquely rounded; whitish, densely irrorated with dark-fuscous, with roundish raised tufts of blackish scales; three in a line from beneath costa at one-sixth to above inner-margin at one-third; three or four in an oblique line from costa at one-third to above middle of inner-margin; just outside this is an ochreous-brown spot in disc before middle; a more obscure curved line of raised dots from costa at one-half to above and before anal angle; just beyond this is an ochreous-brown spot in disc at two-thirds; a very obscure series of dots parallel to hindmargin, not raised; cilia fuscous, with a few whitish scales, and a darker line at one-third. Hindwings fuscous-grey; cilia grey, with a darker line at one-third.

I do not think it necessary to remove this species from *Agriophara*, with which it agrees in neuration, but the peculiar palpi constitute a new section of this genus. The markings are obscure, but the raised blackish dots are characteristic.

Warwick, Queensland; one specimen in October.

ŒCOPHORIDÆ.

The genera here treated of belong to the section of the family without male antennal ciliations, formerly regarded as a separate family, under the name of *Depressariadæ*.

PEDOIS, *Meyr.* (MSS.).

Head with appressed scales, side tufts forming a cone-like projection over face. Antennæ in male simple, pecten absent. Palpi long, second joint exceeding base of antennæ, terminal joint shorter than second, slender, acute. Forewings elongate-oblong, 1 b furcate at base, from junction branching again, lower branch terminating abruptly before reaching margin, 2 and 3 from before anal angle, 6 to apex or costa, 7 and 8 stalked, 7 to costa. Hindwings 1 or slightly over 1, veins 3 and 4 connate, 6 and 7 parallel. Posterior tibiæ long-haired.

I have representatives of six species, which may be tabulated thus—

1.	Vein 6 to costa	2.
	Vein 6 to apex	3.
2.	Forewings with long streaks parallel to veins ...	*tripunctella*, Walk.
	Forewings without long streaks parallel to veins	*cosmopoda*, n. sp.
3.	Second joint of palpi with a minute posterior tuft before apex	*neurosticha*, Lower
	Second joint of palpi without a minute posterior tuft before apex	4.
4.	Hindwings yellow	*eurnorpha*, Meyr.
	Hindwings not yellow	5.
5.	Forewings orange-ochreous	*humerana*, Walk.
	Forewings reddish	*rhodomita*, n. sp.

PEDOIS HUMERANA, *Walk.*

Armidale (3,500 ft.) and Tenterfield (3,000 ft.), New South Wales, in February.

PEDOIS EURNORPHA, *Meyr.* (MSS.).

Armidale (3,500 ft.), New South Wales, in October.

PEDOIS NEUROSTICHA, *Lower.*

Proc. Roy. Soc., S.A., 1894, p. 112.

Gisborne, Victoria, in January; two specimens received from Mr. S. Lyell.

PEDOIS TRIPUNCTELLA, *Walk.*

Brisbane, Queensland, in August and September.

PEDOIS COSMOPODA, *n. sp.*

Male and female, 16-18 mm. Head and thorax grey, irrorated with whitish-grey; face whitish. Palpi whitish: second joint with a dark-fuscous subapical ring, and dark-fuscous basal and medium bars on external surface; terminal joint dark-fuscous anteriorly, posteriorly pinkish-tinged. Antennæ whitish, pinkish-tinged, annulated with dark-fuscous. Abdomen whitish-grey. Legs whitish; anterior and middle tibiæ pinkish, annulated with dark-fuscous. Forewings elongate-oblong, costa strongly arched

at base, thence straight, apex rounded, hindmargin very obliquely rounded; whitish-grey irrorated with dark-fuscous; costal edge pink from base to apex; the irroration is particularly dense along inner-marginal portion of disc, and in posterior portion of disc shows a tendency to form short streaks parallel to veins; cilia whitish, faintly pinkish-tinged, with traces of a medium fuscous line. Hindwings grey, paler towards base; cilia grey.

Closely allied to *P. tripunctella*, Walk, from which it differs in the absence of long discal streaks and the well-marked pink colour of costa and legs.

Sandgate and Wynum, near Brisbane, Queensland; four specimens in August.

PEDOIS RHODOMITA, *n. sp.*

Male, 19 mm. Head whitish, suffused with vinous-red. Palpi whitish; second joint externally suffused with dark-fuscous; terminal joint reddish-tinged; anterior and internal surface dark-fuscous, except at base and apex. Antennæ reddish, with fine blackish annulations, beneath whitish. Thorax whitish-ochreous, reddish-tinged. Abdomen whitish. Legs whitish; anterior pair reddish-tinged. Forewings elongate-oblong, costa strongly arched at base, thence nearly straight, apex rounded, hindmargin obliquely rounded; whitish, irrorated with reddish scales, which form numerous confused longitudinal streaks, a reddish-fuscous dot in disc before middle, a second beyond middle, and a third on fold beneath first; a series of reddish-fuscous dots on apical third of costa and hindmargin; cilia reddish. Hindwings grey, cilia whitish.

Allied to *P. neurosticha*, Lower; very distinct by the reddish colouring.

Mt. Tambourine, Queensland; one specimen taken in January by Mr. C. J. Wild.

PERITORNENTA, *Meyr.* (MSS.).

Head with appressed scales. Palpi long, second joint much exceeding base of antennæ, terminal joint shorter than second, rather stout, acute. Antennæ as long, or nearly as long, as forewings; in male simple, pecten absent. Forewings oblong, with much-rounded apex; 1 b furcate at base, 2 from close before angle, 6 and 7 stalked, 7 to apex. Hindwings 1, veins 3 and 4 stalked, 7 widely separate from 6 at base, somewhat approximated in disc, then slightly diverging.

I have three species referable here—

1. Hindwings ochreous ... ... *cerculatella*, Walk.
   Hindwings not ochreous ... ... 2.
2. Forewings with a series of blackish dots from base to costa at beyond middle ... ... *stigmatias*, n. sp.
   Forewings without a series of blackish dots from base to costa at beyond middle ... ... *thyellia*, Meyr.

PERITORNENTA CIRCULATELLA, *Walk.*

Brisbane, Queensland, in October.

PERITORNENTA THYELLIA, *Meyr.* (MSS.).

Brisbane, Queensland.

PERITORNENTA STIGMATIAS, *n. sp.*

Male, 17-19 mm. Head and thorax pale-fuscous; face whitish. Palpi whitish; terminal joint pale-fuscous, except on internal surface. Antennæ whitish. Abdomen ochreous-whitish. Legs whitish; anterior tibiæ and tarsi pale-fuscous. Forewings elongate-oblong, costa strongly arched at base, thence nearly straight, apex obtusely rounded, hindmargin rounded, scarcely oblique; pale-fuscous, with numerous dark-fuscous dots arranged in rows on veins; a line of dots from base to costa beyond middle; a second row from base to inner-margin beyond middle; eight rows in posterior portion of disc; cilia whitish. Hindwings grey, towards base whitish; cilia whitish.

Brisbane and Mt Tambourine, Queensland; two specimens in November and January.

SCORPIOPSIS SUPERBA, *Turn.*

Proc. Roy. Soc., S.A., 1894, p. 133.

I have seen a second specimen of this species taken by Mr. C. J. Wild on Mount Tambourine, Queensland, in February, and now in the Queensland Museum.

PLUTELLIDÆ.

ENÆMIA DIVES, *Walk.*

Lactura dives, Walk., Bomb, 486. *Calligenia pilcheri*, Lucas, Proc. Linn. Soc., N.S.W., 1891, p. 279.

Rockhampton, Bundaberg, and Brisbane, Queensland.

ENÆMIA MIXOLEUCA, *n. sp.*

Female, 18-19 mm. Head white. Palpi dark-fuscous; terminal joint white. Antennæ grey; towards apex whitish-grey. Thorax dark-fuscous; apex of patagia and a large posterior spot white. Abdomen reddish-orange, beneath whitish. Legs whitish; anterior pair dark-fuscous; posterior tibiæ reddish-orange. Forewings elongate, posteriorly dilated, costa moderately arched, apex rounded, hindmargin obliquely rounded; white; markings dark-fuscous; a broad streak along costa from base to one-fifth; a fascia from middle of costa, much widened in disc and on inner-margin, where it extends from one-fourth to three-fourths, and includes a sinuate white bar, widest on margin, followed by a variably developed white dot; anterior edge of fascia strongly sinuate, and connected with costa streak; a second fascia from

costa before apex to anal angle, moderately broad, inwardly curved, and enclosing a small white dot in disc; three dots on hindmargin beneath apex, tending to coalesce, and to be connected with second fascia; cilia white, on markings dark-fuscous. Hindwings reddish-orange, with an apical fuscous blotch; cilia on apical portion fuscous, with a darker line at one-third, towards anal angle reddish-orange.

Gympie, Queensland; three specimens taken by Mr. R. Illidge.

CALLITHAUMA, *n. g.*

Head with appressed scales, slightly projecting anteriorly. Palpi long; second joint exceeding base of antennæ, smooth scaled, somewhat thickened towards apex; terminal joint much shorter than second, slender, acute. Antennæ in male simple, pecten absent. Thorax smooth. Forewings rather narrow, 1 b furcate at base, 2 from four-fifths, 7 and 8 stalked, 7 to apex. Hindwings under 1, cilia two-thirds, veins 3 and 4 connate, 6 and 7 parallel. Posterior tibiæ smooth-scaled. Male genitalia provided with a pair of long curved processes, arising from inferior surface and projecting upwards.

CALLITHAUMA BASILICA, *n. sp.*

Male and Female, 12-13 mm. Head yellow, mixed with reddish on crown. Palpi orange; terminal joint whitish, with a broad subapical dark-fuscous ring. Antennæ whitish, annulated with blackish; base of first joint reddish. Thorax reddish, mixed with pale yellow. Abdomen grey. Legs whitish; anterior tibiæ reddish. Forewings narrow elongate, costa moderately arched, apex rounded, hindmargin very obliquely rounded; bright-red, mixed with purple-fuscous, markings clear yellow, edges of markings mostly clear red; an oblique bar from base of costa; a moderate fascia from costa at one fourth to inner margin before middle, broadest on costa, somewhat curved in disc; a dot on inner-margin beyond middle, a second dot in disc external to this—these show a variable tendency to connection with a narrow fuscous-edged fascia from costa beyond middle to anal angle; a triangular spot on costa at four-fifths; cilia yellow, at anal angle mixed with red. Hindwings whitish; cilia ochreous-whitish.

Toowoomba and Killarney, Queensland; five specimens in September and October.

PSEUDOTORTRIX, *n. g.*

Head with appressed scales, side tufts rather small. Palpi short, recurved, not reaching base of antennæ; second joint stout, with appressed scales; terminal joint very short, rather

stout, pointed. Antennæ short (half), in male with short ciliations (half), pecten absent. Thorax smooth. Abdomen stout. Forewings posteriorly dilated, apex rectangular, hindmargin not oblique; vein 1 b furcate at base, 2 from near angle of cell, 7 and 8 stalked, 8 to hindmargin, 11 anastomosing with 12. Hindwings over 1; vein 2 from angle of cell, 6 and 7 stalked. Posterior tibiæ smooth-scaled.

I am indebted to Mr. Meyrick for indicating the correct position of the following species, which superficially has a close resemblance to some of the *Tortricidæ*.

Pseudotortrix acosma, *n. sp.*

Male and female, 16-17 mm. Head and thorax brownish-fuscous. Palpi brownish-fuscous, internal surface of second joint white. Antennæ whitish-ochreous, sometimes fuscous. Abdomen dark-fuscous or brownish-fuscous. Legs whitish. Forewings posteriorly strongly dilated, costa moderately arched, apex rectangular, hindmargin very slightly sinuate, rounded beneath, not oblique; brownish-fuscous, posterior portion of disc sometimes suffused with brownish-ochreous; sometimes a small fuscous erect line on inner-margin at one-fifth; a very irregularly angled fuscous line from costa before middle to inner-margin beyond middle; a fuscous dot in disc at two-thirds; followed by two oblique fuscous lines from costa at three-fifths and four-fifths towards, but not reaching, anal angle and hindmargin respectively—all these markings may be obsolete; sometimes a dark-fuscous line close to upper three-fourths of hindmargin; cilia dark-fuscous, at anal angle paler. Hindwings fuscous-grey; cilia grey, towards apex with a darker line at one-third.

Brisbane, Queensland; from January to May six specimens. I have also a female specimen measuring 20 mm., with forewings suffused with pale-ochreous and without markings, taken near the Jenolan Caves, New South Wales, which may belong to the same species.

TINEIDÆ.

NEMOPHORA, *Hübner.*

This genus has not hitherto been recorded outside Europe, and I was in some doubt as to whether the first species here recorded should be referred to it, as in my solitary specimen the face is damaged and palpi broken. In a second closely allied species received from Mr. G. Lyell these parts are perfect.

Nemophora leptosticta, *n. sp.*

Male, 13 mm. Head, thorax, and abdomen pale-grey. Antennæ over three, white. Legs whitish. Forewings posteriorly dilated, costa slightly arched, apex round-pointed,

hindmargin very obliquely rounded; white, with numerous pale-grey dots tending to form interrupted transverse strigulæ; cilia white. Hindwings whitish-grey; cilia white.

Ballandean (2,500 ft.), Queensland; one specimen in February.

Nemophora iolampra, *n. sp.*

Female, 16 mm. Head, thorax, palpi, and antennæ fuscous. Antennæ over two. Abdomen grey. Legs pale-fuscous; posterior pair whitish. Forewings narrow-elongate, not dilated, costa slightly arched, apex round-pointed, hindmargin very obliquely rounded; pale-grey, with violet reflections; irrorated with fuscous scales, which tend to form transverse strigulæ; cilia whitish-grey. Hindwings and cilia whitish-grey.

Gisborne, Victoria; one specimen taken by Mr. G. Lyell in May.

ZONOPS, *n. g.*

Head and face densely rough-haired. Eyes in male divided by a horizontal ridge of scales into upper and lower segments; lower segments greatly enlarged, closely approximated beneath. Tongue short. Antennæ very long in both sexes, about twice forewings, in male filiform, simple, basal joint with pecten present. Labial palpi moderate, second joint slender, with appressed scales; terminal joint about one-half second, slender, acute. Maxillary palpi absent. Posterior tibiæ rough-haired. Forewings with vein 1 furcate, 2 from near angle, 7 and 8 stalked, 7 to costa, 11 from before middle. Hindwings over 1, veins 3 and 4 connate, 5, 6, and 7 equidistant, parallel.

The structure of the eyes in the male is very remarkable. The horizontal ridge of scales apparently serves to divide the field of vision of each eye into an upper and a lower part.

Zonops heteroleuca, *n. sp.*

Male and female, 15-16 mm. Head, face, palpi, and antennæ dark-fuscous; fillet and bases of antennæ whitish in female. Thorax dark-fuscous, patagia pale-fuscous; in female wholly pale-fuscous. Abdomen fuscous; tuft in male white. Legs dark-fuscous, annulated with whitish; posterior pair whitish-fuscous. Forewings narrow-elongate, costa slightly arched, apex round-pointed, hindmargin obliquely rounded; dark-fuscous, with a suffused whitish-grey line along fold, replaced in female by an oblong spot occupying basal two-fifths of inner-margin; a snow-white blotch on costa from three-fourths to apex, containing a few dark scales, its anterior angle connected with a small white spot in disc; in female the apical blotch is prolonged anterior beneath costa as far as disc at one-third; cilia whitish, mixed with pale-fuscous, with a dark-fuscous line at one-third. Hind-

wings two, sinuate beneath apex; dark-fuscous, in female grey; cilia grey, with a dark-fuscous line at one-third.

Brisbane, Queensland; two specimens.

XYSMATODONA POLYMERES, *n. sp.*

Male, 16 mm. Head ochreous-whitish. Palpi dark fuscous. Antennæ dark-fuscous; basal joint ochreous-whitish. Thorax dark-fuscous. Abdomen grey; tuft ochreous-whitish. Legs whitish; antorior pair dark-fuscous, with obscure whitish annulations. Forewings elongate-triangular, costa slightly arched, apex round-pointed, hindmargin obliquely rounded; vein 7 absent; white; markings dark-fuscous; a narrow basal fascia prolonged along costa to one-sixth; an erect spot on inner-margin at one fourth; a moderately broad fascia from costa at one-fourth to before middle of inner-margin, its anterior edge very irregular, deeply excavated in middle; a rather large triangular spot on costa beyond middle, its lower angle nearly meeting a narrow erect spot on anal angle; a triangular spot on costa before apex; several small spots on hindmargin partly confluent; besides these markings there are a few scattered fuscous scales, and the species is probably variable; cilia whitish, faintly ochreous-tinged, on spots bases are fuscous. Hindwings very pale-whitish-grey; cilia whitish.

It appears to resemble *X. hamalitha*, Meyr., but may be distinguished by the wholly pale hindwings.

Brisbane, Queensland; one specimen in July.

XYSMATODONA LENCERES, *n. sp.*

Female, 18 mm. Head, thorax, palpi, and antennæ white. Abdomen whitish-grey; tuft whitish. Legs whitish-grey: posterior pair whitish. Forewings elongate, costa moderately arched, apex acute, hindmargin very obliquely rounded; 7 and 8 stalked; white, with scattered whitish-grey scales, tending to form transverse strigulæ; cilia white. Hindwings very pale-whitish-grey; cilia white.

Closely allied to *X. pelochra*, Meyr., differing in its white colour. From *X. nephelodes*, Meyr., it may be distinguished by the neuration.

Brisbane, Queensland; one specimen in October.

XYSMATODONA PELOCHRA, *Meyr.*

The female is considerably paler in colour than the male, but otherwise similar.

ARDIOSTERES SCOTEINA, *n. sp.*

Male, 22 mm. Head dark-fuscous. Palpi ochreous, mixed with dark ciliations; fuscous, except towards base and at apex

Antennæ dark-fuscous. Thorax with a large posterior crest; dark-fuscous ; apex of patagia and two postero-lateral spots pale-ochreous. Abdomen dark-fuscous; beneath ochreous; tuft large, ochreous-whitish. Legs dark-fuscous, mixed with ochreous. Forewings moderate, posteriorly somewhat dilated, costa rather strongly arched, apex round-pointed, hindmargin obliquely rounded; dark-fuscous, with purplish iridescence; some pale-ochreous scales near base; a pale-ochreous linear mark on costa at two-thirds, with a similar smaller dot beyond it; a whitish erect mark from inner-margin before middle, curving outwardly in disc; a whitish spot on margin before anal angle; a whitish dot above anal angle, and two or three close to hindmargin above middle ; cilia dark-fuscous, with a whitish spot just below middle of hindmargin. Hindwings and cilia dark-fuscous.

Mt. Tambourine (1,800 ft.), Queensland; one specimen taken by Mr. Illidge in February.

CHRYSORYCTIS OCHROXANTHA, *n. sp.*

Female, 15 mm. Head pale-yellowish. Maxillary palpi dark-fuscous. Labial palpi dark-fuscous; internal surface whitish. Antennæ dark fuscous. Thorax dark-fuscous, with a small yellowish posterior spot. Abdomen fuscous. Legs pale-ochreous: anterior and middle tibiæ and tarsi dark-fuscous. Forewings elongate, costa moderately arched, apex rounded, hindmargin very obliquely rounded; pale-yellowish; a well-marked dark-fuscous streak along costa nearly to middle, at base reaching inner-margin; a pale-iridescent-purple fascia from costa at three-fourths, broadening beneath, bounded anteriorly by a fine fuscous, nearly straight line to inner-margin at two-thirds, posteriorly ill-defined, and reaching to lower part of hindmargin; included in middle of fascia is a small oval yellowish spot, placed transversely, and edged by fuscous scales; a short broad dark-fuscous streak beneath apex, extending through cilia; some ill-defined hindmarginal fuscous dots above and below streak: cilia whitish, beneath apex and at anal angle dark-fuscous. Hindwings dark-grey, with bronzy reflections; cilia grey.

Distinguished by the pale colouring, large apical area not occupied by purplish band, and dark subapical streak.

Brisbane, Queensland; one specimen in April.

GRACILARIA PARALLELA, *Turn* *

Brisbane, from July to November; attached to *Acacia Cunninghami* and *Acacia aulacocarpa*.

GRACILARIA LACINIELLA, *Meyr.*

Very common in Brisbane from August to October, but

* In the description of this species, for "alternating" read "attenuating."

smaller in size than specimens from Sydney. The larvæ are tapering posteriorly, of a pale-yellowish-green, and nine roundish blotches in the leaves of *Eucalyptus piperita* (?) and *Eucalyptus eugenioides*, on which they are sometimes very abundant.

Gracilaria tristainæ, *Turn.*

I have bred this species also from *Eugenia ventenatii.* Like the preceding, the antennæ are porrected in repose.

Brisbane, from September to December.

Gracilaria ophiodes, *Turn.*

I took four specimens, all larger and finer than the type, on a fence in Warwick, Queensland, in October.

Gracilaria polyplaca, *Lower.*

Male and female, 10-12 mm. Differs from *G. ida*, Meyr., as follows:—Thorax crimson, with two whitish spots posteriorly, anterior portion wholly crimson. (In *G. ida*, thorax is whitish, with median and lateral reddish lines.) Forewings clear crimson, never suffused with grey; two basal dorsal spots widely separate (in *G. ida* these are usually, if not always, confluent); first costal streak absent, replaced by two discal spots; fourth and fifth costal streaks not touching, but separated by a band of ground colour; black margins of fifth, sixth, and seventh costal streaks not reaching to costal edge.

Closely allied to *Gracilaria ida*, Meyr., the description of which includes both species, but certainly distinct; formerly described by myself as var. *rosea.* From *Gracilaria formosa*, Stt., as defined by Meyrick, it may be distinguished by absence of pale-yellowish suffusion along costa, absence of spot on fold, and by most of the other points mentioned above.

Brisbane, Queensland; taken abundantly from August to October, and again in April, attached to *Tristania conferta* and *Tristania suaveolens.* *G. ida* I have always found attached to *Eucalyptus piperita* (?), *G. formosa* to *Eugenia ventenatii.*

Gracilaria albicincta, *n. sp.*

Male, 8½ mm. Head and thorax pale-ochreous-brown. Maxillary palpi ochreous-whitish. Labial palpi ochreous-whitish; second joint with an apical, terminal joint with a median and subapical dark-fuscous ring. Antennæ longer than forewings, ochreous - whitish, annulated with dark - fuscous. Abdomen ochreous-fuscous; beneath whitish. Legs whitish; apices of tarsal joints fuscous; anterior and middle femora and tibiæ and basal half of posterior femora dark-fuscous, mixed with brownish; middle tibiæ much thickened with scales. Forewings reddish ochreous-fuscous, with scattered dark-fuscous scales; an out

wardly oblique whitish fascia before middle, edges parallel, well defined, with dark-fuscous scales; some half-dozen dark-fuscous dots in fascia; basal part of disc darker coloured than beyond fascia; cilia dark-fuscous, with a whitish subapical line, at anal angle whitish. Hindwings and cilia dark-grey.

Nearest *G. xylophanes*, Turn., but very distinct by the oblique whitish fascia.

Brisbane, Queensland; one specimen in September.

Gracilaria leptalea, *n. sp.*

Male and female, 6-7 mm. Head and thorax whitish. Palpi white; second joint with an apical, terminal joint with a median dark-fuscous ring. Antennæ dark-grey. Abdomen dark-grey. Legs whitish; apex of tarsal joints fuscous; anterior tibiæ and first tarsal joints, outer aspect of distal portion of middle and posterior tibiæ dark-fuscous. Forewings ochreous-fuscous: a white line along inner-margin, somewhat dilated at anal angle, much obscured by dark-fuscous scales, especially from one-fourth to middle; a fine line from costa at one-fourth, running closely beneath costa to three-fourths, there bent obliquely across disc to anal angle; its lower margin suffused with dark-fuscous, oblique portion edged on both sides with dark-fuscous; middle third of costal edge narrowly white; an oblique white streak from costa before apex towards middle of hindmargin; cilia white, with a median and apical dark-fuscous line, on anal angle grey. Hindwings and cilia grey.

A minute species, very distinct from any other I have seen. It cannot be *G. albomarginata*, Stt., which is a larger insect without oblique fasciæ.

Brisbane, Queensland; six specimens on a fence in August and September, almost certainly derived from *Acacia Cunninghamii.*

Ornix trigonophora, *n. sp.*

Male and female, 10-11 mm. Head and palpi white. Antennæ grey. Thorax white, sides fuscous-grey. Abdomen grey, tuft white. Legs white, annulated with grey; anterior pair grey. Forewings narrow-elongate; fuscous-grey, markings white: a broad line along inner-margin, its posterior half containing several streaks of ground-colour; three short oblique lines from costa at two-fifths, three-fifths, and four-fifths; a straight fuscous line, with leaden metallic lustre from costa before apex to anal angle; a dark-fuscous line around margin at apex, enclosing with the preceding a triangular white area, within which is a greyish-ochreous blotch, containing a central blackish spot: cilia white, at apex with apices dark-fuscous, at anal angle grey. Hindwings and cilia grey.

Mt. Tambourine, Queensland; a dozen specimens taken at one spot in November.

ORNIX ACROBAPHES, *n. sp.*

Male, 11 mm. Head and palpi white. Antennæ grey. Thorax grey (?). Abdomen grey, tuft white. Legs white, annulated with fuscous; anterior pair mostly fuscous. Forewings narrow-elongate; grey, markings white, a broad streak along inner-margin, several very short streaks from costa; ante apical portion of disc mostly white, containing two short parallel longitudinal dark-fuscous streaks; apical portion white, enclosed in a triangular fuscous line, and containing a grey blotch, with central dark-fuscous spot; cilia white, at apex with apices dark-fuscous, at anal angle grey. Hindwings grey, apical half intense black, the boundary line is irregular; cilia grey.

Closely allied to the preceding, but at once distinguished by the blackish hindwings. The type is not in perfect condition.

Brisbane, Queensland; one specimen in January.

LEIOPRORA, *n. g.*

Head smooth. Tongue short. Antennæ considerably over one, in male simple, basal joint dilated and concave beneath to form eyecap. Labial palpi short, filiform, drooping, pointed. Maxillary palpi rudimentary. Posterior tibiæ with short stiff hairs on upper surface. Forewings with 1 b furcate at base, transverse vein rudimentary, 3 and 4 absent, 6, 7, and 9 stalked, 7 to costa, 8 absent. Hindwings linear, cell open, 3, 4, 5, and 6 absent.

Allied to *Lyonetia*, Hb., and *Phyllocnistis*, Zel. Distinguishable from the former by the smooth head, and from the latter by the long antennæ, also by the neuration.

LEIOPRORA ASCEPTA, *n. sp.*

Male and female, 5-7 mm. Head ochreous-fuscous, face and palpi white. Antennæ greyish, basal joint whitish. Thorax ochreous-fuscous. Abdomen grey. Legs whitish, anterior tibiæ and tarsi fuscous. Forewings narrow-elongate; ochreous-fuscous, with golden reflections; an indistinct fuscous suffusion on base of inner-margin, and another on costa before middle; a suffused fuscous line from inner-margin at two-thirds obliquely through disc to apex; cilia whitish, apices fuscous, at anal angle grey, with a blackish apical dot, edged towards costa with a few golden-metallic scales. Hindwings and cilia grey.

Brisbane, Queensland; taken rather commonly on fences from June to September.

Opostega nubifera, *n. sp.*

Male, 8 mm. Head and palpi white. Antennæ greyish; basal joint white. Thorax white. Abdomen dark-grey. Legs whitish; anterior pair grey. Forewings elongate; white; markings suffused greyish; two rather broadly suffused acutely angulated fasciæ, first before middle, second beyond middle, interrupted in disc; a rather broad grey line around apex and hindmargin; cilia grey-whitish, at apex with basal half white, interrupted by a narrow oblique blackish bar. Hindwings and cilia grey.

Resembles *O. chalinias*, Meyr., but distinguished by the wholly white head, and the rather broadly suffused markings without golden-fuscous-tinge.

Toowoomba, Queensland; one specimen in September.

ELACHISTIDÆ.

Stathmopoda mannophora, *n. sp.*

Male, 14 mm. Head dark-fuscous; face white. Palpi, external surface dark-fuscous, internal surface white. Antennæ whitish-ochreous. Thorax white, with a moderate posterior dark-fuscous spot. Abdomen grey; edges of segments and tuft whitish-ochreous. Legs pale-ochreous; anterior pair fuscous. Forewings white; a moderate dark-fuscous basal fascia; a moderate fuscous-brown fascia from costa at two-thirds to anal angle; cilia on costa whitish-ochreous, at apex fuscous, thence grey, becoming whitish-ochreous again on inner-margin. Hindwings grey; cilia grey, towards base of inner-margin whitish-ochreous.

Allied to *S. pantarches*, Meyr., but at once distinguished by the dark-fuscous head.

Brisbane, Queensland; one specimen in November, taken by Mr. H. Tryon.

Lozostoma asema, *n. sp.*

Female, 10-11 mm. Head dark-fuscous, narrowly edged posteriorly with yellow; face and fillet whitish. Palpi whitish. Antennæ whitish. Thorax bright-yellow. Abdomen grey. Legs whitish; anterior pair fuscous. Forewings bright-yellow; sometimes a minute dark-fuscous dot in disc beyond middle; cilia bright yellow. Hindwings and cilia grey.

Distinguished by the absence of marking.

Brisbane and Mt. Tambourine, Queensland; four specimens in October and November.

Notes on a Collection of Birdskins from Kalgoorlie, W.A.

By Robert Hall.

[Communicated by Professor E. C. Stirling.]

[Read April 3, 1900.]

Kalgoorlie, Alice Springs, and Derby are approximately 1,000 miles from each other, embracing a triangular-like mass of desert-land, of which the bases are about equal and not unlike. As we have a fairly good record of the birds of Derby and Central Australia, it remains for us to provide a list of what species are known to be associated with the South-West position. To Mr. Lindsay Cameron I am indebted for a nice collection of skins. From his memoranda I gather the country is very desert-like, as far as animal life is concerned. It is, in the main, flat, with low rounded hills every few miles, and is covered with short and dry eucalyptus-scrub some 15 feet high. Occasional Casuarinas are seen, with Salsolaceæ interspersed between the gums. Eucalypts, perhaps 50 feet high, are represented with their branches meagrely supplied with foliage. There appears to be no surface water away from the mining camps, which use it only when condensed. The numerous lacustrine beds hold water for a short time, and get it only after irregular thunder storms. "At the present time," Mr. Cameron writes, "the Government of this colony is supplying us from a part some 300 miles distant." From this information we may gather that water-birds will not be mentioned in this present list, and that it is a land in which an Eastern man so much misses the organ-pipe strains of the Magpies *(Gymnorhinæ)* and the piping notes of the Magpie Lark *(Grallina)*.

To deepen the interest, I supply some few field notes of personal observation upon Eastern specimens of the same species.

Those to which the asterisk is added have received notice by the Sir Thomas Elder Expedition, when above Kalgoorlie, and as recorded in the Trans. Roy. Soc., S.A., XVI., p. 156. Eighteen specimens of ten species are there noted as the total ornithological results of that long journey. The Bower-bird (*Chlamydodera guttata*) appears to have been the most important find, and not before or since recorded as found in W.A. The Cockatoo *(Cacatua roseicapilla)* was at that time noted as well, this being one of three field observations in the West to date. Recorded now as found in West and South-West Australia is the yellow-

throated Minah (*Manorhina flavigula*). It has probably made its course from the centre of the Eyrean sub-region, where it has long been known to exist. The species received by myself are 33 in number. Mr. Cameron has noted in addition ten species. Of the ten species recorded by the Elder Expedition further North, seven are found near Kalgoorlie township.

CERCHNEIS CENCHROIDES, *Vig.* and *Hors.*

Tinnunculus cenchroides, V. and H.; *id.*, Gould, Bds. Austr., fol. vol. I., pl. 13.

Cerchneis cenchroides, Sharpe, Brit. Mus. Cat. Bds., I., p. 431; Hall, "Key to the Birds of Austr.," p. 3.

Adult skin (unsexed), December, 1898. Bars on tail feathers almost obsolete. Both sexes take part in incubation, the male sitting in the hollow of another tree during the night and relieving its mate in the task of incubation during the day. The young when ready to fly are without the yellow cere.

HIERACIDEA ORIENTALIS, *Schlegel.*

Hieracidea berigora, Gould., Bds. Austr., fol. vol. I., pl. 11.

Hieracidea orientalis, Sharpe, Brit. Mus. Cat. Bds., vol. I., p. 422; Hall, "Key to the Birds of Austr.," p. 3.

One juvenile skin received.

PACHYCEPHALA GILBERTI, *Gould.*

Pachycephala gilberti, Gould, Bds. Austr., fol. II., pl. 71; Gadow, Brit. Mus. Cat. Bds., vol. VIII., p. 210; Hall, "Key to the Birds of Austr.," p. 34.

a. Skin, male, 16/10/'98. This specimen does not show a black pectoral collar.

b. Skin, immature male, 26/9/'99. Upper surface with a slight disposition to ashen grey on crown and back, throat and abdomen greyish-white, chest and breast grey, lores grey, wings greyish, tips of primaries being brown; tail grey, upper-tail coverts clear grey, under wing coverts sandy buff. Length of wing, 3·75 ins.; tail 3·5 ins."

On September 1st a nest was found containing four eggs, three being the hitherto recorded number to a clutch. The nest was composed of small sticks and bark, the measurements being—Exterior diameter, 6 ins.; depth of cavity, 4 ins.; total depth, 6 ins.; depth of cavity, 2 ins. Height of nest from ground, 5 feet.

ACANTHIZA APICALIS, *Gould.*

Acanthiza apicalis, Gould, Bds. Austr., fol. vol. III., pl. 57; Sharpe, Brit. Mus. Cat. Bds., VII., p. 296; Hall, "Key to the Birds of Austr.," p. 25.

Skin, adult male, 14/8/'98.

It is a plentiful bird here.

Sericornis brunnea, *Gould.*

Pyrrholæmus brunnea, Gould, Bds. Austr., fol. vol. III., pl. 68. *Sericornis brunnea*, Sharpe, Brit. Mus. Cat. Bds., VII., p. 302; *id.*, Hall, "Key to the Birds of Austr.," p. 26.

Skin, adult male, 12/3/'99. *Loc.*—Golden Ridge.

Micrœca assimilis, *Gould.*

Micrœca assimilis, Sharpe, Brit. Mus. Cat. Bds., vol. IV., p. 124; Hall, "Key to the Birds of Austr.," p. 13.

Adult skin (unsexed), 16/10/'98.

Pomatorhinus superciliosus, *Vig.* and *Hors.*

Pomatorhinus superciliosus, Gould, Bds. Aust., fol. vol. IV., pl. 22; Sharpe, Brit. Mus. Cat. Bds., vol. VII., p. 419; Hall, "Key to the Birds of Austr.," p. 29.

a, *b*. Male and female, 19/3/'99.

c, *d*. Immature skins, 17/1/'99, 19/3/'99.

Xerophila, *sp.*

The one skin received does not agree with any of the known species as described. *X. leucopsis* is the only species of the genus in Western Australia, and with that it has very little agreement. A provisional description was given by the writer in the "Victorian Naturalist," XVI., No. 2.

Cinclosoma castanonotum,* *Gould.*

Cinclosoma castanonotus, Gould, Bds. Austr., fol. vol. IV., pl. 5.

Cinclosoma castanonotum, Sharpe, Brit. Mus. Cat. Bds., VII., p. 333; Hall, "Key to the Birds of Aust.," p. 27.

Adult skin, male, 2/12 '98. The back and rump feathers are dull chestnut, compared with the rich chestnut of the Eastern birds in my cabinet.

Climacteris rufa, *Gould.*

Climacteris rufa, Gould, Bds. Austr., fol. vol. IV., pl. 94; Gadow, Brit. Mus. Cat. Bds., VIII., p. 335; Hall, "Key to the Birds of Austr.," p. 35.

Adult skin, male, 24/7/'98.

The common tree-creeper of this district.

Climacteris superciliosa, *North.*

Climacteris superciliosa, North, "Horn Exp. Cent. Aust.," Zool., plate; Hall, "Vic. Nat.," vol. XVI., No. 11; *id.*, "Key to the Birds of Austr.," p. 35.

a. Skin, male, 30/10 '98. *b*. Skin, female, 24/11/'98.

I am in receipt of a skin from Nannine, N.W.A., and dated 30/7/'99. It is probably a female, and shows the two central

tail feathers to be brown rather than grey, the colour of the upper tail coverts.

PETRŒCA BICOLOR, *Vig.* and *Hors.*

Petroica bicolor, Gould., Bds. Austr., fol. vol. III., pl 7.

Petrœca bicolor, Sharpe, Brit. Mus Cat. Bds., vol. IV., p. 173; Hall, "Key to the Birds of Austr.," p. 14.

Adult skin (not sexed), 11/12/'98.

The habits of this bird are very different to those of the other members of this family, and one would scarcely know it to belong to the Robins. It pipes its trilling notes from early to late, and when other Robins are in the shade, this is most actively chasing and capturing grasshoppers. It freely associates with other birds (as the Artamidæ). Amongst birds in general, there appears to be security in numbers.

PETRŒCA GOODENOVII, *Vig.* and *Hors.*

Petroica goodenovii, Gould, Bds. Austr., fol. vol. III., pl. 5.

Petrœca goodenovii, Sharpe, Brit. Mus. Cat. Birds, vol. IV., p. 171; Hall, "Key to the Birds of Austr.," p. 13.

a. Adult skin, male, 20/1/'99. *c.* Skin, juv. male, Dec., 1898.
b. Immature skin. *d.* Skin, juv. female, Dec., 1898.

(*a*). It is blacker on the throat and duller on the breast than the Eastern skins in my collection. The forehead "reds" bear the same relation to the breast "reds" in each.

(*b*). It has the basal frontal mark duller than in (*a*) and much less of it. The breast red is dull, throat brownish-black.

(*c*). It has only a trace of red on the forehead and pectoral regions; throat, crown, and nape greyish-brown.

(*d*). It has a faint trace of red on the forehead, none on the breast.

The plumage of what are called the Red Robins is quite imperfect at the close of 12 months, yet in this phase they nest and rear a family. Immature birds in Victoria have nested in August of different years. Matured birds will breed twice in a season with two to three eggs laid on successive days. Incubation lasts 14 days, during which the disturbed bird will often feign injury when you approach the nest. Mr. J. A. Hill, of Kewell, in a letter to me gives the time between the starting of nest-building to laying of first egg as ten days. On February 15, 1899, I secured a young male skin in Victoria showing the change from the brown plumage to the showy one. The tawny feathers of the forehead had mostly given way for the brilliant reds: one patch of brownish feathers remained on the chest, while all the others either had "burst their buds" or were doing so into bright-red. Excepting the middle feathers, all the others of the tail were short and irregularly graduated. The brownish

wing primaries were giving way to the black quills in order from the first; the earthy plumes of the remaining parts of the body were making place for the blacks; abdomen and lower tail coverts were already white.

Gould proved *P. leggii* to moult its "reds" annually. A new supply shows out almost patch for patch in *P. phœnicea* in February (skins, 26/1/1900, described Roy. Soc. of Vic.). The song of this species is clear and strong, like *P. leggii*, but is much sweeter and of a different setting.

ARTAMUS PERSONATUS, *Gould.*

Artamus personatus, Gould, Bds. Austr., fol. vol. II., pl. 31; Sharpe, Brit. Mus. Cat., Bds., vol. XIII., p. 16; Hall, "Key to the Birds of Austr." p. 48.

Immature skin, female, 24/11/'98. The mask is not so well defined as in adult skins, and the outer borders of the primaries are edged with light-brown.

This species, like *Corvus coronoides*, places outposts as an act of prevention when bellicose birds are in the neighbourhood. They change their sentinels irregularly, but are always sure to have some three to four birds perched on an elevated position watching the interests of the general body of feeders below. Others fly up at intervals to take up the duty. If an enemy, say in the shape of a Crow-shrike, appears, the sentinels' necks croon forward, and discordant calls, louder and in quicker time than is usual, are given. The colony is on the wing at once in readiness for an attack, and they certainly seem to think discretion is the better of valour, for away they go to take up a position elsewhere. A very similar observation has been communicated to me by Mr. Geo. Graham concerning *A. superciliosus*. In this case the enemy seemed specially to be the White-backed Crow-shrike (*G. leuconota*).

ARTAMUS SORDIDUS, *Latham.*

Artamus sordidus, Gould, Bds. Austr., fol. vol. II., pl. 27; Sharpe, Cat. Bds. Brit. Mus., vol. XIII., p. 19; Hall, "Key to the Birds of Austr.," p. 48.

a. Skin, female, 14/8/'98. No white in third primary—indicates not quite mature. Second primary longer than first.

b. Skin, nestling male, 10/12/'96. The upper and under surfaces brown, streaked and spotted with dusky white, much stronger on the upper; wings deep slate, second and third primary edged with clear white on the outer webs, coverts wedge-marked with brown at tips; tips of primaries clearly marked by white, also shoulder of wing, both of which entirely disappear in the adult; distal third of rectrices white, bill brown, legs and feet slatey-brown. Length of wing, 3·1 ins.; culmen, 0·4 ins.; tail, 1·5 ins.

The following portion of their gregarious habit is specially interesting :—*Roosting for the Night.*—Usually in fine weather the sheltered side of a rough shell of an old tree is selected. When cold nights prevail, a stump, so burnt that the upper part forms an inverted funnel, is then chosen. The interest is to watch the shuffling upward movements of the birds as they move towards and enter the hole. While those on the stump are getting safely housed, their numbers are added to by more that are flying about and watching their opportunities. Sometimes the hole is not large enough to hold all ; they then cluster in a great bunch (like a bee-swarm when at rest) beneath the dome. Hence the generic name *Artamus*, and a previous reference under other conditions. Should a person pass too near, there is a nerve-startling rush, such as a tree falling close to you would produce, and the process of camping has to be repeated.

PARDALOTUS ORNATUS, *Temm.*

Pardalotus striatus, Gould, Bds. Austr., fol. vol. II., pl. 38.

Pardalotus ornatus, Sharpe, Brit. Mus. Cat. Bds., vol. X., p. 55 ; Hall, "Key to the Birds of Austr.," p. 46.

a, *b*. Skins, adult male and female, 4/9/'98.

COLLYRIOCINCLA RUFIVENTRIS, *Gould.*

Collyriocincla rufiventris, Gould, Bds. Austr., fol. vol. II., pl. 75 ; Sharpe, Brit. Mus. Cat. Bds., vol. III., p. 292 ; Hall, "Key to the Birds of Austr.," p. 11.

a. Skin, adult female, 14/8/'98.

b. Skin, immature female, 4/9/'98.

(*a*). General plumage brownish-grey, lores and other parts corresponding with the tint of brown over most of the grey. Bill black ; length, 0·9 inch.

(*b*). General colour of plumage grey, lores and other parts agreeing, except region of vent and under tail coverts, which correspond with those of *a*. Bill light-horn, blacker along the culmen ; length, 0·75 inch.

The immature female has the eyebrow like its surroundings in colour.

TAENIOPYGIA CASTANOTIS, *Gould.*

Amadina castanotis, Gould, Bds. Austr., fol. vol. III., pl. 87.

Tæniopygia castanotis, Sharpe, Brit. Mus. Cat. Bds., vol. XIII., p. 311 ; Hall, "Key Bds. Austr.," p. 50.

Skin, male, 20/11/'98. Forehead and crown uniform grey ; under portion of tail deep brown.

That this species is a "host" of the cuckoo, *Chalcococcyx basalis*, is now placed on record. Mr. Cameron writes—"A colony of the chestnut-eared Finch had its nests sprinkled about, some having

eggs, and others vacant. In one of the latter I found the cuckoo's egg (skin since received). I left it, and several days after (November 19) I visited the nest, and found no other eggs added. The Finches had deserted. In one tree there were as many as 30 nests. In the split spout of a eucalypt the nest is occasionally built." A favourite situation in the orient is at the base of a Crow or Hawk's nest, and the Finch and Hawk perch within a foot of each other amicably. One nest had a clutch of nine eggs. Sometimes the rudely-built nests meant for the non-sitting bird will contain eggs. The compactness of the nest will depend on the surroundings and its material. Several nests placed in polygynum were very small and slightly built. It prefers open and dry country, although its presence is indicative of water not being far away. Mr. J. P. Rogers has communicated to me a field note of value. Inland from the Fitzroy River two of us had a terrible thirst experience, and, although we watched a hundred of this bird, we could not find water along the creek bed. Watching carefully a dozen, we saw them settle in the bowl of the lowest fork of a large mulga, and, following them, we found about two tablespoonfuls of water in it. This is about what is saved from a slight thunderstorm, and we are pleased to acknowledge the service rendered by a species of Finch.

Ephthianura tricolor,* *Gould.*

Ephthianura tricolor, Gould, Bds. Austr., fol. vol. III., pl. 66; Sharpe, Brit. Mus. Cat. Bds., vol. VII., p. 667; Hall, "Key Bds. Austr.," p. 30.

Skin, adult male.

This Chat appears in great numbers at Kalgoorlie by the end of October, and begins to depart towards the end of December. Further North *E. aurifrons* has been noticed (Elder Exp.).

Oreoica cristata,* *Lewin.*

Oreoica gutturalis, Gould, Bds. Austr., fol. vol. II., pl. 81.

Oreoica cristata, Gadow, Brit. Mus. Cat. Bds., VIII., p. 174; Hall, "Key Bds. Austr.," p. 32.

a. Skin, juv. male, 13/3/'99. Forehead brownish-grey, crest feathers light black and less in number than in the adult: back less ruddy than in adult; throat fawn-grey, with two whitish feathers on the gorget; one to two blacks showing on breast; winglet new.

b. Skin, adult male. The forehead is black, while the lores are the creamy colour of the throat. The lores of *a* are brownish, like the forehead, with a flush of grey over them.

The call of the young differs from that of the adult, and Mr. Cameron clearly distinguishes it from the call of the Eastern

bird. The aborigines of W.A. have noted two settled calls. This supports the statement of Dr. Stirling and Mr. Zeitz (Roy. Soc., S.A., XVI., p. 156) that they are the calls of young and old of the same species. A nest with three eggs was hidden in a group of young leaves.

Cracticus destructor, *Temm.*

Cracticus destructor, Gould, Bds. Austr., fol. vol. II., pl. 52; Gadow, Brit. Mus. Cat. Bds., vol. VIII., p. 100; Hall, "Key Bds. Austr.," p. 32.

By examining a series of skins, I find the most developed male may be recognised by the white throat, grey back, flanks and sides of upper breast greyish-white; culmen, 1·62 inches. The development is from deep-brown on the dorsal region to black and grey; from light-brown on the under surface to a nearly clear white under surface in the adult. The brown barring on the young is displaced by the faint blue-grey on the sides of the breast in the adult.

a. Skin, juv. male, 11/12/'98. The feather-shafts from the forehead to the interscapulum are rufous-brown.

b. Skin, female fledgling, about three days out of nest, 20/11/'97. Head, neck, and back deep-brown; rump light-brown; upper tail coverts light-brown, barred with deep-brown; centres of cheek feathers light-brown; sides of neck show brown patches; lores brown; throat, abdomen, and under tail coverts white, tinged with brown; chest and breast brown and brownish-white, the brown forming blotches and bars; wings deep-brown, secondaries and coverts edged with pale-rufous; tail brown, tipped with white, tinged with pale-rufous; bill brownish-black at the base, brown at the tips; legs slatey-brown. Length of wing, 4·3 ins.; tail, 2·8 ins.; culmen, 0·85."

Ptilotis ornata, *Gould.*

Ptilotis ornata, Gould, Bds. Austr., fol. vol. IV., pl. 39; Gadow, Brit. Mus. Cat. Bds., vol. IX., p. 244; Hall, "Key Austr. Bds.," p. 43.

a. Skin, adult female, 4/9/'98. *Loc.*—Golden Ridge.

b. Skin, adult female, 16/10/'98. *Loc.*—Kalgoorlie Centre. The two centre tail feathers were very much decomposed.

c. Skin, immature, 2/4/'99. *Loc.*—"Hannan's Lake." General plumage browner than in *a* or *b*. More yellow on wings; breast more heavily blotched with brown; edges of inner webs of primaries edged with fulvous. New tail quills were developing, and the bird was concluding its autumn moult.

Manorhina flavigula, *Gould.*

Myzantha flavigula, Gould, Bds. Austr., fol. vol. IV., p. 79.

Manorhina flavigula, Gadow, Brit. Mus. Cat. Bds., vol. IX., p. 261; Hall, "Key Austr. Bds.," p. 44.

Skin, adult female, 5/3/'99. Length of wing, 4·7 ins.; tail, 4·5 ins.

This bird was concluding its moult, and the innermost quill was "bursting." The winglet feathers had their sheaths still attached.

The finding of *M. flavigula* in West or S.W. Australia is now placed on record, and the law of representation with this genus, as defined by Gould, is a little interfered with. In likely probability it has journeyed from the central portion of the continent.

GLYCYPHILA ALBIFRONS, *Gould.*

Glycyphila albifrons, Gould, Bds. Austr., fol. vol. IV., pl. 29; Gadow, Brit. Mus. Cat. Bds., vol. IX., p. 211; Hall, "Key Bds. Austr.," p. 39.

a. Immature skin, 27/11/'98.

b. Immature skin, male, 27/11/'98. Forehead black, a few of the lateral feathers feebly tipped with slatey-white; around eye black, a faint ring of white appearing; crown black; narrow line leaving angle of lower mandible, white; ear coverts silvery-slate, behind which is an irregular line of white; chin feathers dusky-black, edged with impure white; primaries and primaries-coverts-margins yellowish-green; under surface of wing fulvous; upper tail coverts rufous, central parts black; abdomen, flanks, and under tail coverts whitish, with centres of feathers narrowly marked with brownish-black; bill, legs, and feet black. Wing, 3 ins.; tail, 3 ins.; tarsus, 0·8 ins.; culmen, 0·65 ins.

ENTOMPHILA LEUCOMELAS, *Cuvier.*

Melicophila picata, Gould, Bds. Austr., fol. vol. IV., pl. 49.

Entomophila leucomelas, Gadow, Brit. Mus. Cat. Bds., vol. IX., p. 220; Hall, "Key Bds. Aust.," p. 40.

Skin, adult female, 19/10/'98.

CUCULUS PALLIDUS, *Latham.*

Cuculus inornatus, Gould, Bds. Austr., fol. vol. IV., pl. 85.

Cuculus pallidus, Shelley, Brit. Mus. Cat. Bds., vol. XIX., p. 261; Hall, "Key Bds. Austr." p. 58.

Skin, adult male, 4/9/'98.

The male skins in my cabinet appear to fall into three phases in the development of the plumage:—

a. Young, in which white predominates throughout the plumage, the feathers being broadly edged and dentated by the white; quill tips also white; the pigment of the plumage beyond the white patches is blackish-brown. Bill nutty-brown; culmen, 0·65 in.

b. Immature, in which white does not predominate throughout the plumage. The feathers are narrowly edged with white, and

feebly dentated by the white; quill tips not edged with white other than the third, and that slightly so. The pigment of the plumage as a whole is dark-brown. Bill blackish; culmen, 0·8 in.

c. Adult, in which there is little white throughout the plumage, the feathers not being edged with white, and some of the quills and rectrices alone dentated with white; plumage generally light-brown. Bill blackish; culmen, 0·85 in., and broader at nostrils than in *a* or *b*.

Chalcococcyx basalis, *Horsf.*

Chrysococcyx lucidus, Gould, Bds. Austr., fol. vol. IV., pl. 89.

Chalcococcyx basalis, Shelley, Brit. Mus. Cat. Bds., vol. XIX., p. 294; Hall, "Key Bds. Austr.," p. 59.

An egg only of this bird was sent to me, but subsequently I was personally able to collect the species just N.E. of Albany.

Misocalius palliolatus, *Latham.*

Chalcites osculans, Gould, Bds. Austr., fol. vol. IV., pl. 88.

Misocalius palliolatus, Shelley, Brit. Mus. Cat. Bds., vol. XIX., p. 279; Hall, "Key Bds. Austr.," p. 59.

Skin, adult female, 4/9/'98.

Halcyon pyrrhopygius, *Gould.*

Halcyon pyrrhopygia, Gould, Bds. Austr., fol. vol. II., pl. 22.

Halycon pyrrhopygius, Sharpe, Brit. Mus. Cat. Bds., XVII., p. 258; Hall, "Key Bds. Austr.," p. 57.

The adult skin dated December, 1896, has a pale-green head and a clear white nuchal collar.

Psephotus multicolor, *Temm.*

Psephotus multicolor, Gould, Bds. Austr., fol. vol. V., pl. 35; Salvadori, Brit. Mus. Cat. Bds., vol. XX., p. 566; Hall, "Key Bds. Austr.," p. 67.

a. Skin, adult female, 11/12/'98.

b. Skin, adult male, 11/12/'98.

c. Skin, adult male, 15/3/'99.

a, *b*, and *c* indicate three distinct phases of the plumage:—

(*a*) Primaries, secondaries, their coverts, the tail and its coverts very much decomposed.

(*b*) General plumage above olive, as well as upon the throat and chest, breast light-green; abdomen lemon-green; shoulder feathers dull-red.

(*c*) The olive of (*b*) is bright-green; abdomen orange and yellow; shoulder feathers bright-yellow, illustrating xanthochroism.

Specimen (*b*) would need to go through another moult to

obtain a brighter frontal yellow band, a clearer red upon the shoulders, and more white upon the tail feathers to become fully adult.

BARNARDIUS ZONARIUS, *Shaw.*

Platycercus bauri, Gould, Bds. Austr., fol. vol. V., pl. 20.

Barnardius zonarius, Salvad., Brit. Mus. Cat. Bds., XX., p. 560; Hall, "Key Bds. Austr.," p. 66.

Adult skin, 19/2/'99. The specimen was concluding a moult, for the last of the yellow feathers of the breast were "bursting." All but the outer three quills have a maculated line upon the under surface of the wing. In the South-West this species nips off the blossoms of the eucalypts when they have once been explored for nectar. It is not improbable that this is the means for saving the labour of re-examining a flower. Thousands of blossoms daily fall by this means.

MELOPSITTACUS UNDULATUS, *Shaw.*

Melopsittacus undulatus, Gould, Bds. Austr., fol. vol. V., pl. 44; Salvad., Brit. Mus. Cat. Bds., vol. XX., p. 594; Hall, "Key Bds. Austr.," p. 68.

Skin, adult male, 16/10/'98.

The species flocks into the district in July, and pairs in October, as far as noted. The skin received showed an inner quill missing from one wing, and one strangely growing from the lower back. It appeared to be identical with the missing one. The not unusual occurrence of a snake entering the nest of a bird occurred under Mr. Cameron's notice, and the four eggs were eaten by the reptile, after which it slept for several hours in the nest.

The following species have been recognised by Mr. Cameron, without the skins being forwarded to the writer:—

Uroaëtus audax, Latham.
Falco melanogenys, Gould.
Corone australis, Gould.
Graucalus melanops, Latham.
Podargus phalænoides, Gould (?).
Eupodotis australis, Gray.
Dromæus novæ-hollandiæ, Latham.
Cheramœca leucosternum, Gould.
Plectrorhynchus lanceolatus,* Gould.
Gymnorhina dorsalis, Camp.
Rhipidura tricolor, Vieill.

---

* Not yet recorded as a W.A. species.

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

XXVI.

[Read May 1, 1900.]

CARABIDÆ.

CLIVINA.

C. eyrensis, sp. nov. Minus convexa; sat nitida; brunneo-testaceus; mandibulis brevibus; clypeo ab "alis" distincto, quam hæ magis producto, antice fere truncato ad extremitates angulato; oculis sat (fere ut *C. Bovillæ*, Blackb.) convexis; prothorace quam longiori paullo latiori, fortiter anguste canaliculato, antice leviter angustato, latera versus transversim leviter rugato vix punctulato, foveis posticis fere nullis; elytris sat æqualiter sat profunde striatis, striis parum manifeste punctulatis, stria quinta antice cum externis conjuncta; tibiis anticis extus tridentatis. Long., $2\frac{4}{5}$ l.; lat., $\frac{9}{10}$ l.

From the characters mentioned above it will be seen that this species falls into the group called by Mr. Sloane (Proc. L.S., N.S.W., 1896, p. 151) the "*obliquata* group." Of the species included in that group and known to Mr. Sloane only one species (*C. Riverinæ*) agrees with the present one in being of sub-depressed form, and with its prothorax wider than long; from which the present insect differs notably by *inter alia* the fifth and sixth elytral striæ deeply impressed throughout their whole length (and not, or scarcely, less strongly impressed than the other striæ), by the almost complete absence of elongate foveæ near the base of the pronotum, and by its more convex eyes. From the species of the *obliquata* group not known to Mr. Sloane (of all of which the types are in my collection) *C. eyrensis* differs by its much more convex eyes.

S. Australia; near Lyndhurst (Lake Eyre basin), taken by Herr Koch.

C. Adelaidæ, Blackb. I take this opportunity of mentioning that this insect appears to me to be the species that Mr. Sloane identifies with *C. obliquata*, Putz. Mr. Sloane (*l.c.*) gives his reasons for thinking that *obliquata* is founded on an insect not

very readily recognisable by its author's description,—reasons that seem to be on the whole conclusive,—and therefore *C. Adelaidæ* must be quoted, I think, as a synonym of *obliquata.*

CYLCOTHORAX.

C. peryphoides, Blackb. Mr. Sloane in a recent valuable paper (P.L.S., N.S.W., 1899, p. 563) discusses the relation of this insect to his new species *C. cordicollis*, and mentions my having stated that the latter is distinct from it, proceeding to conjecture the distinctive characters. I fear, from this, that I must have answered his enquiries hurriedly and without giving my reasons for considering the two distinct,—for which if it was so I certainly owe him my apologies,—though it is possible he may have mislaid remarks I may have written on the subject and only remembered that I reported the two species as both valid. In point of fact they are closely allied but (apart from the great difference in the colour of the legs,—a character worthy of note when accompanied by structural divergence) the form of the prothorax furnishes a perfectly satisfactory distinction. In *cordicollis* the lateral margins of that segment (the short sub-basal parallel-sided part being disregarded) diverge for considerably more than half their length so that the greatest width of the segment is in front of the middle even of the part with curved sides, whereas in *peryphoides* the corresponding part of the lateral margin is an even curve, the greatest width of the prothorax being exactly at the middle of the curve, with the result of a very different facies,—the prothorax looking distinctly more transverse in *peryphoides* than in *cordicollis*, although careful measurement shows it to be only very slightly so. The lateral outline of the prothorax of *peryphoides*, if the short parallel sided basal piece be disregarded, is exactly like the lateral outline of that segment in *C. ambiguus*, Er. In *peryphoides*, moreover, the form of the whole insect is wider and less convex,—more robust-looking.

LAMELLICORNES.

CEPHALODESMIUS.

C. minor, sp. nov. Niger, antennis palpisque pallidis; sat opacus; clypeo brevius 4-dentato, dentibus medianis quam ceteri paullo longioribus; prothorace transverso, sat crebre minus fortiter punctulato, leviter canaliculato (canali antice obsoleto), ad latera ampliato-depresso, parte ampliata ad medium tuberculo parvo instructa, lateribus paullo ante medium et sat longe pone medium perspicue angulatis (inter angulos fere rectis sed retrorsum leviter convergentibus), angulis anticis sat acutis posticis fere rectis; elytris sub-sulcatis (ut *C. armigeri*, Westw., sculpturatis), setis brevibus crassis ferrugineis sparsim vestitis.

Maris pygidio sat convexo, opaco (apice anguste nitido), minus perspicue punctulato, setis ut elytra vestitis; tibiis posticis manifeste flexuosis.

Feminæ pygidio planato, ut maris sculpturato et vestito, parte postica nitida in medio retrorsum angulatim dilatata; tibiis posticis haud flexuosis. Long., 4½ l.; lat., 3 l.

Closely allied to *C. armiger*, Westw., but a little smaller, with the clypeal teeth shorter, and having the outline of the prothorax notably different. The lateral margin of that segment runs from the front angle obliquely hindward and outward, then making a well-defined angle runs nearly straight (but slightly inward) nearly to the base where it makes another angle, from which it runs very obliquely to the base. The outline between the front margin and the anterior of the lateral angles is almost strongly (and that between the lateral angles slightly) concave. Of the other described species of *Cephalodesmius*, *Castelnaui*, Har., and *Macleayi*, Har., are described as having nitid lævigate areæ or tubercles on the disc of the prothorax; *quadridens*, Macl., has the front part of the head impunctulate; *cornutus*, Macl., has the clypeal structure altogether peculiar, and *laticollis*, Pasc. (which is very slightly described) is stated to be much larger than the insect before me (long., 7 l.) with the prothorax wider than the elytra (in the present insect it is by measurement slightly narrower than the elytra), and it is implied that the prothorax is of the same shape as in *armiger*.

N.S. Wales; Richmond R. (sent by Mr. Lea).

C. armiger, Westw. The male of this species has the hind tibiæ scarcely flexuous and the pygidium very similar to that of *C. minor*, while the pygidium of the female resembles that of *C. minor* in having a nitid apical space dilated hindward in the middle,—but the shape of the dilatation is very different in the two species, being in *minor* a small triangular space in the middle of the narrow nitid edging of the segment, while in *armiger* the subtriangular nitid space covers the whole apical portion of the segment,—the lines that meet in an angle on the middle line of the segment having their other extremities at the lateral ends of the nitid space,—their angle thus being widely obtuse, while in *minor* it is acute.

LABROMA.

L. horrens, Shp. Mr. Lea has recently sent to me for identification a specimen of this insect. Dr. Sharp (Rev. and Mag. de Zool. 1873, p. 262) in characterising the genus stated that the type had no front tarsi, but that very probably they had been broken off. The example before me has front tarsi very similar to those of *Cephalodesmius*, to which genus it is very close.

PLATYPHYMATIA.

S. squalidus, Macl. Among some specimens sent to me by Mr. Cowley which agree very well with Sir W. Macleay's description of this insect, and which were taken in the same locality as the type, I find a single example, which I take to be the female. It agrees with the male in all respects of sculpture, &c., except in the anterior elevation of its prothorax being much less strong, its pygidium notably less gibbose, and its hind femora unarmed.

OCNODUS.

O. lepidus, sp. nov. Ferrugineus, clypeo picescenti, antennarum clava dilutiori; nitidus; fortiter punctulatus, elytrorum puncturis quam ceteræ manifeste majoribus; clypeo antice subrotundato; prothorace quam longiori duplo latiori, antice parum angustato, angulis anticis productis minus acutis posticis obtusis, lateribus leviter rotundatis, basi vix lobata; elytris obsolete tricostatis, haud setosis; tibiis anticis extus tridentatis. Long., $4\frac{1}{2}$ l.; lat., $2\frac{1}{3}$ l.

Differs from *O. spinicollis*, Blackb., and *fallax*, Blackb., *inter alia* by the obtuse hind angles of its prothorax, from *O. decipiens*, Burm., and *ferrugineus*, Blackb., by the absence of setæ on the upper surface, and from *lugubris*, Blackb., by the very much less close puncturation of its pronotum. The upper margin of the labrum is distant from that of the clypeus (as in *O. fallax*). The sculpture of the upper surface is in all parts very similar to that of *O. fallax*. It should be noted in respect of this insect (as I have pointed out in describing other species that I have attributed to *Ocnodus*) that it is possible it is not really congeneric with *O. decipiens*, Burm., a species that I have never been able to identify.

S. Australia; basin of Lake Eyre (taken by Herr Koch).

HETERONYX.

H. unicus, sp. nov. Sat brevis; sat latus; modice convexus; nitidus; subglaber, lateribus corpore subtus pedibusque sparsim pilosis; pallide brunneo-testaceus; capite confertim rugulose, prothorace sparsius sat fortiter, elytris inæqualiter (*i.e.*, puncturis sat grossis et aliis minoribus inæqualiter intermixtis), pygidio vix manifeste, punctulatis; clypeo fortiter reflexo antice late rotundato, sutura clypeali minus distincta; prothorace quam longiori fere duplo latiori, antice minus angustato, lateribus sat rotundatis pone medium vix subsinuatis, basi media late leviter lobata, angulis anticis parum productis posticis obtusis; elytris costis sat obsoletis circiter 4 instructis, his quam interspatia magis sparsim punctulatis; tibiis anticis extus 3-dentatis; labro clypeum

haud superanti; antennis 9-articulatis; coxis posticis quam metasternum multo brevioribus; unguiculis appendiculatis, parte basali quam apicalis vix longiori. Long., $4\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

An extremely distinct species notable for the apical piece of its claws being scarcely shorter than the basal piece, and the peculiar sculpture of its elytra, each of which bears about four longitudinally convex spaces extending from near the base to near the apex. On these convex portions the puncturation of the general surface is partially interrupted resulting in the elytra having a striate appearance which is most unusual in the genus. The punctures of the elytra are for the most part coarse, but with a confused and irregular intermingling of considerably less coarse punctures. In my tabulation of the section of *Heteronyx*, to which this species belongs (P.L.S., N.S.W., 1891, pp. 488-9) it falls beside *H. Froggatti*, Macl., from which it differs *inter alia* by the uniformly close rugulosity of its head.

S.A.: taken by Herr Koch near Lyndhurst.

ANACHEIROTUS (gen. nov. *Sericoidarum)*.

Mas? Mentum quam latius longius, antice parum emarginatum; palpi labiales breves, articulo ultimo obconico; palpi maxillares modici, articulo ultimo cylindrico ad apicem truncato, quam penultimus multo longiori; labrum angustum valde transversum, late leviter arcuatum, vix prominulum, a clypei parte antica (hac fere ut *Haplopsis* subtus retrorsum obliquum) bene discreta; oculi magni sat distincte granulati, antice a cantho profunde incisi; antennæ (speciei typicæ) 9-articulatæ, clava 3-articulata articulis præcedentibus 4 conjunctis longitudine sat æquali; clypeus supra antice valde reflexus et late emarginatus (nonnihil ut *Haplopsis lineoligeræ*, Blanch., mas); prothorax transversus; elytra elongata nullo modo striata (stria subsuturali excepta); tibiæ anticæ extus obtuse leviter tridentatæ, posticis modice latis (fere ut *Haplopsis lineoligeræ*, Blanch.) sed pone medium fortiter transversim carinatis; tarsi breves robusti (quam tibiæ parum longiores); unguiculi valde bifidi; sterna sat glabra; coxæ posticæ quam metasternum parum breviores.

The small *Lamellicorn* for which I propose this new generic name is extremely difficult to place, as it combines the characters of very widely different genera. Its short stout tarsi are like those of the genus that I take to be *Ocnodus* (except in not being clothed beneath with tufts of long hair) from which it differs strongly in most other characters. Its clypeus and mouth organs suggest *Haplopsis*,—but there the resemblance ends. Its claws are those of a *Heteronyx* but its mouth organs and clypeus

(especially its extremely narrow,—almost linear,—non-prominent labrum) separate it widely from *Heteronyx.* In my tabulation of the Australian *Sericoid* genera (Tr. R.S., S.A., 1898, pp. 32-4) it must take its place beside *Heteronyx*,—which is perhaps its most natural position. To include it in the tabulation, the following must be substituted for line 25 on page 34 :—

FF. Form notably more convex.
G. Labrum largely developed and prominent ... *Heteronyx.*
GG. Labrum extremely narrow and not prominent ... *Anacheirotus.*

A. inornatus, sp. nov. Totus pallide testaceus; supra sparsim breviter pubescens, lateribus longe ciliatis; sat nitidus; clypeo crebre subtiliter, capite postice fortius minus crebre, prothorace fortiter sparsim, elytris quam prothorax magis crebre paullo minus fortiter, pygidio sparsim minus fortiter, punctulatis; clypei lateribus ante oculos fortiter angulatis; pronoto transverso, antice parum angustato, lateribus leviter rotundatis, angulis anticis leviter acutis posticis rotundatis. Long., 2 $\frac{4}{5}$ l.; lat., 1$\frac{1}{5}$ l.

The clypeal canthus cuts into the eye to a little in front of its middle, and its lateral margin is strongly angular behind, the apex of the angle projecting a trifle beyond the outline of the eye.

S. Australia (Basin of Lake Eyre); taken by Herr Koch, near Farina.

ANOPLOGNATHUS.

A. concinnus, sp. nov. Mas? Sat brevis; minus convexus; nitidissimus; supra glaber, corpore subtus pygidioque sparsissime albido-pilosis; supra brunneo-castaneus plus minusve viridi-micans, corpore subtus obscure viridi vel cyaneo plus minusve violaceo-micanti, metasterno medio (exemplorum 2 visorum) splendide aureo, antennis palpis pedibusque castaneis; supra sparsim subtiliter punctulatus, elytris puncturis paullo majoribus lineatim leviter impressis, pygidio ad latera paullo magis perspicue punctulato; clypeo antice sat fortiter elevato-reflexo, rotundato, antennarum clava quam articuli præcedentes 5 conjuncti sublongiori; prothorace fortiter transverso, antice modice angustato leviter emarginato, postice fortiter bisinuato (lobo mediano haud emarginato), lateribus fere rectis, angulis anticis vix acutis posticis sat abrupte rectis; elytris ad apicem conjunctim late rotundatis; mesosterni processu elongato, acuto; tibiis anticis externe 3-dentatis, dentibus apicalibus 2 approximatis inter se, dente 3° (hoc paullo ante tibiam mediam sito) subobsoleto; unguibus ad apicem acutis haud fissis. Long., 6$\frac{1}{2}$ l.; lat., 3$\frac{1}{3}$ l.

This species is the smallest *Anoplognathus* yet described, being

a little smaller than *A. abnormis*, Macl., but otherwise does not appear to differ from its typical congeners, either structurally or in *facies*. In Sir W. Macleay's grouping of the *Anoplognathi* (Tr. E.S., N.S.W., II., pp. 353-4) it should be placed, I think, in the group containing *rugosus*, Kirby, *pectoralis*, Burm., and *dispar*, Macl., from all of which it differs widely *inter alia* by the subobsolete puncturation of its elytra.

N. Queensland; Mr. French.

BUPRESTIDÆ.

STIGMODERA.

In the Ann. Soc. Ent., Belg., 1898, there is a lengthy paper by M. Kerremans containing descriptions of a large number of new *Buprestidæ*, chiefly from Australia. Having recently been revising the *Stigmoderæ* of my own collection, and of the South Australian Museum, I have taken the opportunity to study M. Kerremans' late work somewhat closely as far as concerns the genus *Stigmodera*, and in the following notes I record the result, and add some remarks on certain other *Stigmoderæ*, together with the description of some new species.

S. triangulosa, Kerr. (*l.c.*)=*terræ-reginæ*, Blackb. (Tr. Roy. Soc., S.A., 1893, p. 295). It seems to me doubtful whether both these names will not have to be dropped in favor of *S. biguttata*, Macl. (Trans. Ent. Soc., N.S.W., I., p. 24)—a name that was applied to an insect which (judged by the description) might well be a variety of the species I (and subsequently M. Kerremans) described under the above names.

S. campestris, Kerr., nom. præocc. (Blackb , Tr. Roy. Soc., S.A., 1897, p. 31) I propose for it the name *subgrata*. In spite of its being, as M. Kerremans points out, extremely close to *S. grata*, Saund., the apical truncature of its elytra *inter alia* seems inconsistent with its being a mere variety.

S. sensitiva, Kerr. (*l.c.*)=*S. victoriensis*, Blackb. (Tr. Roy. S., S.A., 1890, p. 152).

S. laudabilis, Kerr. (*l.c.*). Judging by the description I should say this insect is *S. Skusei*, Blackb. (Tr. Roy. S., S.A., 1892, p. 46).

S. verax, Kerr. (*l.c.*). This species must be very close to (if not identical with) *S. Mastersi*, Macl. (Tr. Ent. Soc., N.S.W., II., p. 245).

S. colorata, Kerr, (*l.c.*), nom. præocc. (Hope, Tr. Ent. Soc., Lond., 1847, p. 283). I propose the name *dulcis* for this handsome species, of which there is a fine example in the S.A. Museum.

S. acuminata, Kerr. (*l.c.*). This species seems to be without doubt identical with *S. acutipennis*, Thoms.

S. placens, Kerr (*l.c.*). Evidently identical with *S. cara*, Blackb. (Tr. Roy. Soc., S.A., 1892, p. 216).

S. vigilans, Kerr. (*l.c.*). I have before me specimens from Victoria (M. Kerremans' locality) which agree very well with the description of this species. They appear to me, however, to be merely a variety of *S. rectifasciata*, Saund.

S. consularis, Kerr. (*l.c.*).=*S. guttaticollis*, Blackb. (Tr. Roy. S.A., 1892, p. 157).

S. addenda, Kerr. (*l.c.*). I can find nothing in the description of this insect to distinguish it from *S. pallidipennis*, Blackb. (Tr. Roy. Soc., S.A., 1890, p. 154). *Addenda*, moreover, is a nom. præocc. (Thoms. Typ. Bupr., 1878, p. 52).

S. bucolica, Kerr. (*l.c.*). The description of this species does not indicate any difference from *S. Sieboldi*, L. and G.

S. tacita, Kerr. (*l.c.*). The habitat of this species is given merely as "Australia" I have examples from Eyre's Peninsula of a *Stigmodera* that agrees very well with the description, and which I have regarded doubtfully as a variety of *S. Kirbyi*, Guér., but on reconsideration I think it is a good species.

S. ocularis, Kerr. (*l.c.*). I cannot find anything in the description of this insect to distinguish it from *S. lilliputana*, Thoms.

S. mansueta, Kerr. (*l.c.*) The habitat given is merely "Australia." I have specimens from W. Australia which fit the description very satisfactorily.

S. crocipennis, Hope (Bupr., p. 6). This species seems to be generally regarded as identical with *S. rufipennis*, Kirby. It appears, however, to me to be more probably the allied *S. parallela*, Saund.

S. dawsonensis, Blackb. In Tr. Roy. Soc., S.A., 1892, p. 220, I expressed a doubt whether this might not prove to be an extreme variety of *S. lilliputana*, Thoms. It is, however, a good species.

S. tasmanica, Kerr. (C.R. Soc. Ent. Belg., 1890, p. 2). This insect is certainly I think one of the innumerable varieties of *S. Stricklandi*, Hope, of which I have many specimens from Hope's locality (Morialta, near Adelaide), and also from Tasmania and other localities in Southern Australia. Lightly coloured examples agree with Hope's description in having flavous elytra each marked with a dark spot, below the shoulder a median dark fascia, and a large dark blotch filling the apical one-fourth of the elytra and bearing a small reddish or yellow spot in its middle. There is a still lighter variety in which the spot in the dark apex is much enlarged, and another in which it becomes a fascia cutting off a dark fascia from the front of the apical dark blotch. Other specimens are darker than the type,—the subhumeral dark spot enlarging till it becomes a fascia and

the median fascia becoming more or less wider than in the type. These last-named examples agree with the description of *tasmanica* in having the elytra dark violaceous with three pale fasciæ. I have specimens of the above forms taken in company quite promiscuously, from Tasmania as well as S. Australia, Victoria, and Southern N.S. Wales. Whether this insect is identical with *S. Mitchelli*, Hope, appears to me very doubtful in spite of Mr. Saunders' assertion of its identity, for he says that *Mitchelli* has elytra unarmed at the apex (which is not the case with the present species) and Hope mentions a fovea on the pronotum near the hind angle which is not to be found in the present insect. The type of *S. Mitchelli* was from W. Australia, and I have not seen *S. Stricklandi* or anything like it from that colony. *S. Stricklandi* may be distinguished from all the other hitherto described *Stigmoderæ* as follows: apex of elytra truncate and feebly bi-acute, prothorax dark with lateral margins pale, under surface dark (except sides of prothorax and of abdomen and sometimes a spot on the hind coxæ), elytra having transverse zones of dark and pale colouring (more than two zones pale, the apex dark) their interstices moderately convex and their apical points feeble, head scarcely concave longitudinally. All the numerous varieties (that I have seen) of *Stricklandi* are covered by the above description, and I know of no other species that it will fit.

S. ostentatrix, Thoms. This insect is very near *Stricklandi*, but is a good species, differing by, *inter alia*, its strongly costate elytral interstices and strong sutural spine at the apex of its elytra, as well as in the colouring of its prothorax. I have a fine example of it in my collection, but do not know its exact habitat, which seems to have been unknown to M. Thomson also; there is an example also in the S.A. Museum marked "W.A.?"

S. Karattæ, Blackb. In Tr. Roy. Soc., S.A., 1890, pp. 149-50, I pointed out the distinctions of this species from *S. Stricklandi* (which I called *S. Mitchelli* on Saunders' authority, though I now doubt the identity.) If *S. Mitchelli* be distinct from *S. Stricklandi*, *Karattæ* is still distinct from *Mitchelli*, being very differently marked and coloured from the type and (even if *Mitchelli* prove to be variable in colour and markings) differing also, *inter alia*, in the absence of a fovea near the hind angles of the pronotum.

S. rugosipennis, Thoms., Arch. Ent., 1857, p. 111. This seems to be clearly a synoym of *S. obscuripennis*, Mann. Bull. Mosc., 1837, p. 32. I believe this synonymy has hitherto escaped notice.

S. Carpentariæ, Blackb. This seems to be the insect referred to by Mr. Waterhouse [Ann. Nat. Hist. (s) VII.] as a local form

of a specimen previously mentioned by him as a var. of *S. viridicincta*, Waterh. (Tr. Ent. Soc., Lond., 1874, p. 543.) I have not seen the var. ? last named, but am quite satisfied that *S. Carpentariæ* is distinct from *S. viridicincta*, as it differs not only in colouring and pattern (which are very widely distinct) but in numerous other characters also, *e.g.*, its prothorax notably more strongly transverse, the striæ of its elytra more closely punctured, the extero-apical tooth of its elytra less acute.

S. elegantula, White (Stoke's Journ., I., p. 507.) Its author, after describing this species, says "near *coccinata*, Hope." I cannot find any difference at all in the two descriptions indicating that they are not founded on one and the same species. Hope, it is true, calls the antemedian mark on the elytra a spot (not reaching the suture) whereas according to White it is a fascia narrowed by a deep notch before reaching the suture, but there are so many species of *Stigmodera* in which an antemedian dark marking consists of a fascia liable in varieties to be broken up into isolated spots that no specific value can be attributed to the character, and I can find no other to fall back upon. The species is a very distinct one, with no close allies as yet described.

S. Pascoei, Saund. This magnificent insect is stated by its author to occur in "Australia," without the mention of any more exact habitat. I have seen an example in the collection of Mr. W. W. Froggatt, which was taken at Kalgoorlie, in Western Australia.

S. cœrulea, Kerr. In Mem. Soc. Ent. Belg., 1892, M. Kerremans proposes this name as a substitute for the nom. præocc. *cœlestis*, Kerr. I, however, had in 1890 (Tr. R.S., S.A., p. 148) proposed the name *stillata* for it.

S. flavescens, Masters (*flava*, Thoms.). M. Kerremans (Mem. Soc. Ent., Belg., 1892, p. 148) makes this identical with *S. flava*, Saund. The latter species I am familiar with, and it is correctly described as having the apex of each elytron rounded. *S. flavescens* is described as having the apex of each elytron bidentate. Unless Thomson's description is actually incorrect the two can hardly be identical.

S capucina, Blackb. I find that this is a nom. præocc. having been used by Thomson (Rev. and Mag. Zool., 1856, p. 46) for an insect that appears to be identical with *decipiens*, Westw. However, I subsequently (Tr. R.S., S.A., 1894, p. 141) described under the name *Caroli* a *Stigmodera* which I was eventually satisfied must be regarded as a var. of my *capucina* (*l.c*, 1897, p. 31) and consequently *Caroli* becomes the name of the species that I originally named *capucina*.

S. carinata, Macl. M. Kerremans (Mem. Soc. Ent., Belg., 1892, p. 145) gives this name as a synonym of *S. plagiata*, Gory.

I have before me several examples of Macleay's insect, and am inclined to think them distinct from *plagiata* though undoubtedly very close to it. The form of the common apical dark blotch on the elytra seems constantly different,—in *carinata* filling the whole apex (its front margin on each elytron a more or less sinuous line running from the suture obliquely hindward and outward to the lateral margin), while in *plagiata* it does not fill the whole apex but is a square spot the front margin of which runs out transversely towards the lateral margin of the elytron, and at a considerable distance from it meets (at a right angle) the lateral margin (of the spot) which runs hindward as a straight line parallel to the suture to join the lateral margin of the elytra, reaching it at a very short distance from the apex (of the elytra). In *plagiata* but not in *carinata* the lateral margin of the elytra is of a red colour distinctly brighter than the colour of other parts of the surface, and the pronotum of *carinata* is evidently more gibbous than that of *plagiata* with the central longitudinal line considerably more strongly impressed.

S. insignicollis, sp. nov. Sat elongata; minus lata; pone medium minus fortiter dilatata; sat nitida; supra glabra, subtus pilis minus brevibus albidis plus minusve dense vestita; splendide aureocuprea (nonnullis exemplis plus minusve viridi-micantibus) prothoracis macula magna discoidali (hoc basin nec apicem attingenti) læte violacea; elytris rufo-auarantiacis notas cyaneo-nigras præbentibus [sc. fascia postbasali angusta margines laterales haud attingenti (hac exemplorum nonnullorum in maculas 2 vel 3 divisa), fascia mediana curvata (antrorsum convexa), et macula communi præapicali (hac formam variabili) cum fascia mediana secundum suturam connexa vel haud connexa]; capite sat brevi, crebre subgrosse punctulato, longitudinaliter concavo; prothorace quam longiori ut 7 ad 5 (postice quam antice ut $6\frac{1}{2}$ ad 4) latiori, in parte violaceo sparsius subfortiter nec rugulose (in parte cetera fortiter rugulose confluenter) punctulato, lateribus arcuatis juxta basin sinuatis, angulis omnibus acutis, basi sat fortiter bisinuata; elytris striatis, striis punctulatis, interstitiis sat fortiter convexis sat fortiter (ut striæ) punctulatis, apice oblique emarginatis, parte emarginata externe quam ad suturam multo magis fortiter acuminata, lateribus postice subtiliter crenulatis. Long., 6—$8\frac{1}{2}$ l.; lat., $2\frac{1}{5}$—$3\frac{1}{5}$ l.

The most distinctive character of this species consists in the very remarkable colouring and sculpture of the prothorax. The disc is occupied by a large violaceous spot (which, however, does not reach the front margin) on which the puncturation is smooth and not close, while the rest of the surface is of a brilliant golden

copper colour, and is coarsely and confluently rugulose. The pattern on the elytra (apart from colour) resembles roughly that of *S. cyanicollis*, Boisd., as figured by Mr. Saunders (*loc. cit.*) but the fasciæ or spots are not connected by dark colouring on the suture, except in occasional examples having the median fascia and præapical spot connected. In some specimens, however, the three spots placed transversely across the sub-basal part of the elytra are narrowly confluent so as to form a fascia, and the shape of the common præapical spot varies from circular to semicircular.

W. Australia (taken near Cue by Mr. Ellershaw).

S. quadrifasciata, Saund. I met with a few specimens (evidently identical with the insect on which this species was founded) in Central Australia on the flowers of a small shrub (unknown to me by name) near the Cecilia Creek. It is a variable species, both the basal and subapical fasciæ of the elytra having a tendency to break up into isolated spots placed in a transverse row. In Saunders' description the colour of the abdomen is given as "olivaceous" as distinguished from the cyaneous remainder of the under surface, while in my three examples the under surface is uniformly cyaneous, but as in all other respects my examples agree absolutely with the figure and description (allowing for the variation in the elytral pattern in two of them as noted above) I have no doubt the recorded colouring of the abdomen is either sexual or occasional.

S. rubriventris, sp. nov. Modice elongata, minus convexa, pone medium modice dilatata; sat nitida; supra glabra, subtus sparsim argenteo-pilosa; ænea, elytris rufis notas cyaneas præbentibus [sc., maculas 3 postbasales transversim positas (e his mediana communi late ad basin producta, his in exemplis nonnullis fere confluentibus), fasciam postmedianam integram cum macula postbasali mediana anguste in sutura connexam, et maculam apicalem communem subtriangularem (hac cum fascia postmediana anguste in sutura connexa et ad apicem summam dilatata)], antennis pedibusque violaceis, abdomine rubro ad basin ænescenti; capite sat brevi, crebre fortiter punctulato, longitudinaliter concavo; prothorace quam longiori (et postice quam antice) ut 12 ad 7 latiori, crebre sat fortiter (ad latera subrugulose) punctulato, in medio anguste interrupte longitudinaliter lævi, lateribus pone medium fortiter dilatato-rotundatis, angulis anticis acutis posticis rectis, basi leviter bisinuata; elytris striatis, striis subtiliter punctulatis, interstitiis antice parum (postice fortiter) convexis sparsim (latera versus magis crebre) punctulatis, ad apicem acuminatis haud (vel oblique vix manifeste) emarginatis, lateribus haud crenulatis; unguiculis modicis fortiter divergentibus. Long., $6\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

In one of the two specimens before me the lateral two of the three postbasal elytral spots are widely separated from the median spot; in the other specimen they are all but confluent with it; I have no doubt these spots are liable to become a fascia. The apical spot is a triangle with its apex at the apex of the elytra, but its extreme apex is dilated so as to cover narrowly the whole elytral apex. The postmedian fascia is notably wider in one specimen than the other; it crosses the elytra at right angles to the suture and (in that sense is straight, but) its margins are sinuous. Among the species having the head and prothorax of uniformly dark colour the elytra red with three zones of dark colouring, the abdomen uniformly red except base, and the apex of the elytra not distinctly emarginate; the present species is recognisable by the following characters in combination, —size not less than 4½ l. nor more than 9½ l., elytra separately acuminate at the apex.

W. Australia; sent to me by Mr. French.

S. insignis, Blackb. In the diagnosis of this species (Tr. Roy. Soc., S.A., 1892, p. 217, line 3 of the diagnosis) "ante basin" should be "ante apicem." "Ante basin" being of course nonsense, and the term "subapical" in the remarks following the diagnosis being evidently applied to the same marking that *ante basin* is applied to in the diagnosis, probably any reader would discern that *ante basin* must be a *lapsus calami*, but it is better to draw attention to it here.

S. filiformis, Blackb. In the diagnosis of this species (Tr. Roy. Soc., S.A., 1892, p. 218, line 8) for "suture" read "lateral margin."

S. cincta, Blackb. (*rubrocincta*, Kerr., nom. præocc). "Australia" is the habitat attributed to this species. I have an example from W. Australia.

S. obesissima, Thoms. (Typ. Bupr., App. I., 1879, p. 32), is clearly a synonym of *S. Saundersi*, Waterh. (Ann. N.H., 1876, p. 70). This synonymy has not been previously recorded.

S. flavipennis, Géhin. My collection and that of the S.A. Museum contain specimens of what I take to be this insect. They vary into a form which is possibly *S. elegans*, Géhin,—though none of them quite agree in markings with the figure of the latter insect. They are certainly not varieties of *S. Yarrelli*, L. and G. (as *flavipennis* and *elegans* are said to be) from which —disregarding the totally unlike colouring of their elytra—they differ by the presence of long white hairs on their head and thickly clothing their sterna, as well as by the very much closer puncturation of their prosternal process. There is a doubt, it is true, about the identity with *flavipennis* of the specimens before me because the pilosity of their sterna is quite dense, whereas

Géhin speaks only of "quelques poils rares;" because their form is notably shorter and wider than the form of *Yarrelli*, while Géhin seems to say that *flavipennis* is "narrower and longer than *Yarrelli*,—but it is not quite clear he may not mean that *Yarrelli* is narrower and longer than *flavipennis* (which is the more likely since *Yarrelli* is a particularly narrow and elongate species); and because their sterna and hind coxæ are variably (but always considerably) variegated with yellow, whereas in *flavipennis* they should be entirely green. The last-named discrepancy is of less consequence inasmuch as Géhin's description is evidently carelessly written containing the statement that the "ventre et bords postèrieurs des segments abdominaux" are of a beautiful green colour. The ventral segments of the specimens before me are yellow, with their (except the apical one) hindmargins green. Géhin says that *S. flavipennis* is allied to "*Yarrelli* and *flavipennis*" (the latter name obviously a misprint). The species I am discussing (and for which I claim the name *flavipennis*, Géhin, until the claim may be shown erroneous by an inspection of Géhin's type) is smaller than *Yarrelli* (Long., 9—10 l.) and notably less narrow and elongate. Its under surface and legs are considerably more closely punctulate, its sterna quite densely clothed with long white hairs. Its head is pilose, the sutural apex of its elytra bears a distinct (though not long or very sharp) spine limiting a distinct (though feeble) truncation of the apex of each elytron. Its colours and markings are very similar to those of *Yarrelli* except on the elytra where they are quite different. The elytra vary from uniform reddish testaceous (except the extreme base) to a form in which there is a small common sutural cyaneous spot a little behind the scutellum, a row of four cyaneous spots placed transversely (two on each elytron) slightly behind the middle and a narrow cyaneous edging of the apex. The insect is found in S.W. Australia. It is to be noted that in the type of *Yarrelli*, Hope (as described by Mr. Saunders, Tr. Ent. Soc., Lond., 1868, p. 32), and in examples in my collection the apex of the elytra is simply rounded, while in other specimens before me (otherwise indistinguishable) the apex of the elytra is slightly truncated and the apex of the suture is slightly produced (though less so than in *flavipennis*).

S. elegans, Géhin. This insect (referred to above as possibly identical with *flavipennis*, Géhin) is more probably, I think, a distinct species that I have not seen. I cannot understand its being called a variety of *Yarrelli* as no variety of the latter (observed by me,—and I have seen many) much resembles it in markings, and the size (12—13 mm.) greatly increases the difficulty of supposing it to be *Yarrelli*. Its author mentions having seen a good many specimens and the varieties he indicates are

still less than the type like *Yarrelli.* Its markings come nearer those of *S. bifasciata*, Saund., than of any other *Stigmodera* known to me, but it is certainly not that species.

EUCNEMIDÆ.

NEOLYCAON (gen. nov.)

I propose this name as a substitute for *Lycaon*, Bonvouloir (Ann. Soc. Ent. Fr., 1875), my attention having been called by Mr. T. S. Hall, M.A. (of Melbourne University) to its being a *nom. præocc.* in Zoology, owing to its use for *Mammalia* by Brookes (I see Scudder gives it "Smith") in 1827.

ELATERIDÆ.

LACON.

L. Victoriæ, Cand. In Pr. L.S., N.S.W., 1891, p. 508, I doubtfully attributed to this species an insect occurring near Melbourne, the doubt arising from its antennæ being testacecus or reddish in colour, whereas the description seemed to me to imply their being of darker colour. Subsequently Dr. Candéze sent me a specimen as his *Victoriæ*, which is identical with the insect I called by the name.

L. farinensis, sp. nov. Sat latus; sat opacus; piceo-ferrugineus, pronoti angulis posticis et elytrorum marginibus (sutura excepta) plus minusve rufescentibus; supra setis pallidis brevibus crassis sat crebre vestitus; capite pronotoque sat crebre sat fortiter punctulatis; hoc quam in medio longiori vix latiori, sat fortiter convexo (a latere viso), lateribus a basi sat longe ultra medium leviter subsinuatim divergentibus (hinc ad apicem fortiter convergentibus); elytris quam prothorax ut 9 ad 5 longioribus, subobsolete punctulato-striatis, interstitiis planis biseriatim (quam striæ haud magis subtiliter) punctulatis plus minusve distincte granulatis vel rugulosis,—epipleuris adversus abdominis basin recte truncatis; coxis posticis in medio subito fortiter angustatis; sulcis ad tarsos recipiendos in prosterno metasternoque sat fortiter impressis nec (ut *L. caliginosi*, Guer., sunt) bene definitis. Long., $2\frac{2}{5}$—$3\frac{1}{5}$ l.; lat., 1—$1\frac{1}{5}$ l.

A very distinct little species; the following characters in combination distinguish it from all its described Australian congeners:—Tarsal sulci on sterna very distinct but not sharply cut, front part of epipleuræ narrowed opposite the hindmargin by a straight truncation, hind coxæ suddenly and strongly narrowed about halfway between their base and the lateral margin of the body, elytra much longer than but less than twice as long as the prothorax, the punctures of the elytral striæ not larger

than those of the interstices, antennæ of pale-ferruginous colour, elytral margins pale-ferruginous and the interstices granulous or rugulose, upper surface set with short coarse pale setæ, size very small. The prothorax to a casual glance looks longer than wide but by measurement the length down the middle line is slightly less than the greatest width. The nearest allies of this species are, I think, *L. duplex*, Blackb., and *Victoriæ*, Cand., from both which it differs *inter alia* by its colour and the strong rugulosity of its elytral interstices.

S.A.; Lake Eyre basin; taken by Herr Koch at Lyndhurst, near Farina.

RHIPIDOCERIDÆ.

ENNOMETES.

E. (Callirrhipis) ruficornis, Gray. Some years ago I took, in the Blue Mountain district of N.S.W., a species which seems to be the very briefly described *Callirrhipis ruficornis*, Gray. It is however quite clearly a member of Pascoe's genus *Ennometes* (which seems to me worthy of being considered really distinct from *Callirrhipis*). I can find no character to distinguish as species *E. Lacordairei*, Pasc., and *C. ruficornis*, Gray, nor does the insect before me differ from either description except in being somewhat larger than the specimen described by Pascoe (Gray does not mention the size of his species). As Pascoe makes no reference to *C. ruficornis* it seems not unlikely that he overlooked it, and I suspect that *Callirrhipis ruficornis* and *Ennometes Lacordairei* are identical, in which case the insect must stand as *Ennometes ruficornis*, Gray.

RHIPIDOCERA.

R. mystacina, Fab. Mr. Waterhouse (Tr. E.S., Lond., 1875, p. 202) describes the typical specimen of this insect and mentions that examples from Northern Queensland are quite identical with it. He then mentions what he calls the "common form" which he says has the prothorax spotted (not evenly clothed) with white pubescence as being in his opinion a variety of *mystacina*. I have before me specimens of typical *mystacina* from N. Queensland and also examples with spotted prothorax from Tasmania, Victoria, and S. Australia. These do not appear to differ *inter se* except in the Tasmanian specimens being larger than those from the mainland. They are decidedly *R. femoralis*, Kirby (which was described from a small island close to Tasmania) and are certainly a good species differing from *mystacina* (apart from the vestiture of the prothorax) by *inter alia* the darker colour of their derm and the notable sinuation of the sides of their prothorax (the same in *mystacina* being nearly straight).

MALACODERMIDÆ.

TRICHALUS.

In Tr.R.S., S.A., 1894, I expressed the opinion that the genus *Trichalus* cannot be maintained as distinct from *Metriorrhynchus.* In Proc.L.S., N.S.W., 1898, Mr. Lea concurs with this view but seems to think that it is desirable to use the name as a matter of convenience because the distinction between the two forms is easily recognisable (the subsutural elytral costa in *Trichalus* becoming obsolete at a short distance behind the base, while in *Metriorrhynchus* it is similar to the other costæ). I think there is something to be said in favour of that proposition, as both forms are very numerous in Australia, and to treat them as generically distinct certainly simplifies the task of identifying and describing them. Accepting the name *Trichalus* on the above grounds, I offer the following notes.

T. (Metriorrhynchus) semicostatus, Blackb. *Trichalus* being regarded as a genus this species must be referred to it. *T. Raymondi,* Lea, must be somewhat close to it, and was taken in the same region (the Australian Alps). Probably however it is distinct, as *Raymondi* is said to have the median line of the head distinct, the antennæ of the male not reaching to the middle of the elytra and the rostrum tinged with red at the apex, whereas in *semicostatus* there is no distinct median line on the head, the antennæ of the male would certainly reach back to the middle of the elytra and the rostrum is entirely black. If the two names should prove to refer to the same insect my name has the priority.

T. funereus, sp. nov. Niger, elytrorum apice testaceo; rostro nullo; prothoracis areola discoidali lanceolata bene definita; elytris costis longitudinalibus discoidalibus integris 3 et alia subsuturali postice abbreviata instructis (his inter se æqualibus), interstitiis biseriatim areolatis (series lineis subtilibus continuis separantur); antennis quam corporis dimidium sat longioribus, sat compressis, articulo 4° quam 3us parum longiori. Long., $4\frac{1}{5}$ l.; lat., $1\frac{1}{2}$ l.

Its colouring (entirely black except the testaceous apex of the elytra) *inter alia* distinguishes this species from all its described Australian congeners. The only one of them in which the prothorax is black and the elytra not entirely red is *T. discoideus,* Er., of which Mr. Waterhouse mentions a form (in his opinion a variety) coloured like the present insect except in having the suture of the elytra red. The description of that species, however, calls the prothorax "antrorsum angustatus," which would not apply satisfactorily to this species as its prothorax is scarcely at all narrower in front than behind. Moreover I have a

Trichalus from Tasmania (Erickson's locality) which I believe to be *discoideus* and from which the present insect differs *inter alia* by the very much larger areolæ into which its elytral interstices are divided; they are like those of *Metriorrhynchus (Stadenus) inquinulus*, Waterh.

Victoria; Dividing Range.

T. distinctus, Lea. The description of this species scarcely differs from that of *T. ampliatus*, Waterh., and both descriptions might well be founded on the same insect as *Lycus ochraceus*, Dalm.

METRIORRHYNCHUS.

M. insignipennis, sp. nov. Mas. Totus niger; prothorace 7-areolato; rostro fere nullo; elytris costis longitudinalibus 4 instructis; hæ costæ costulis transversis numerosis bene definitis inter se junctæ sunt, ita ut in utroque elytro areolæ quadratæ longitudinaliter 5-seriatim positæ sunt; antennis corporis dimidio longitudine sat æqualibus, sat fortiter compressis, articulis omnibus (basali 2° que exceptis) quam latioribus plus minusve longioribus, articulo 3° 4° æquali. Long., $3\frac{3}{4}$—4 l.; lat., 1 l.

Although the rostrum is very short it cannot be called quite non-existent, the distance from the base of the antennæ to the base of the maxillary palpi being not much shorter than the length of one of the latter. The elytra have each four discal costæ without any trace of intermediate elevated longitudinal lines,—so that the sculpture of each elytron may be said to consist of five rows of well-defined areolæ separated from each other by longitudinal costæ of which the second is the most conspicuous. This sculpture is suggestive of Mr. Waterhouse's genus *Xylobanus* but the costulæ connecting the elytral costæ are not uniformly transverse; they resemble those of *M. scalaris* as figured by Waterhouse (Tr.E.S., Lond., 1877, Pl. I., fig. 56) and in any case *Xylobanus* does not appear to me capable of being maintained as more than a section of *Metriorrhynchus*. The second joint of the antennæ is scarcely visible.

Tasmania.

M. atratus, Fab. Fem. Totus niger; prothorace 7-areolato; rostro fere nullo; elytris costis longitudinalibus discoidalibus 4 instructis, interstitiis biseriatim indistincte areolatis (series lineis indistincte,—antice magis distincte,—elevatis separantur); antennis quam corporis dimidium sat brevioribus, sat fortiter compressis, articulis 3° 9° quam latioribus vix vel haud longioribus, 10° quam latiori multo longiori quam 9us multo angustiori. Long., $4\frac{1}{2}$ l.; lat., $1\frac{1}{5}$ l.

Very near *M. hæmorrhoidalis*, Er., of which I should be dis-

posed to consider it a colour var. with the elytral sculpture accidentally wanting in distinctness were it not for the very evident difference in the antennal structure,—the penultimate joint being very much narrower than the antepenultimate and not much less than half again as long as wide, while in the same sex of *hæmorrhoidalis* the penultimate joint is scarcely narrower than the antepenultimate and is scarcely if at all longer than wide. As *Lycus atratus*, Fab., is very insufficiently described and there cannot be much doubt of this Tasmanian *Metriorrhynchus* being identical with it I have thought it desirable to describe it fully.

Tasmania.

M. cliens, sp. nov. Fem. *M. clientulo*, Waterh., affinis; niger, in elytrorum partibus tribus anticis ruber; prothorace 5-areolato; rostro nullo; elytris costis longitudinalibus discoidalibus 4 instructis (his inter se sat æqualibus), interstitiis biseriatim areolatis (series lineis subtilibus elevatis separantur), sculptura basin—et præsertim apicem—versus quam in medio magis perspicua; antennis quam corporis dimidium vix longioribus, sat fortiter compressis, articulis 4° —9° quam longioribus sat latioribus, articulo 3° quam 4us sat longiori. Long., 4 l.; lat., 1$\frac{1}{3}$ l.

Easily distinguishable from most of its congeners by the surface of its pronotum being divided into five areolæ, of which the two antero-lateral ones are coarsely punctulate. Differs from *M. clientulus*, Waterh., *inter alia* by the four principal elevated lines on the disc of its elytra being equal *inter se*, and the hind angles of its prothorax not produced outward.

N.S.W. (Tweed R.).

M. flagellatus, sp. nov. Mas. Niger, elytris rufo-testaceis; prothorace 7-areolato; rostro elongato (tibiæ anticæ longitudine sat æquali); elytris costis longitudinalibus discoidalibus 4 instructis (his inter se plus minusve æqualibus), interstitiis biseriatim perspicue et regulariter areolatis (series lineis subtilibus elevatis bene definitis separantur); antennis quam corporis dimidium vix longioribus, sat fortiter compressis, articulis 3°—10° longe flabellatis, flabellis haud serratis (ut ea *M. gigantis*, Blackb., sunt), articuli 3^{i} flabello ultra articuli 5^{i} basin producto. Long., 7 l.; lat., 1$\frac{4}{5}$ l.

The long slender rami into which the antennal joints of the male are produced distinguish this species from all the other described Australian members of the genus (except *gigas*, Blackb.) having similar colouring (entirely black except the entirely red elytra). From *gigas* it differs by its narrower and more elongate form, the distinctly *testaceous* tone of colour on the elytra, the tendency of the elytral costæ to become feebler towards the apex, the narrower prothorax (especially in proportion to the width of

the head), and the non-serrate outline of the antennal rami. The antennæ resemble those of *M. cinctus*, Waterh.

N.S. Wales; taken by Mr. Froggatt near Yass. (His. No. 44.)

M. miles, sp. nov. Mas. Niger, elytris rufis; prothorace 7-areolato; rostro fere nullo; elytris costis longitudinalibus discoidalibus 4 instructis (his inter se sat æqualibus), interstitiis biseriatim areolatis (series lineis subtilibus distinctis,—his basin versus quam costæ vix minus elevatis,—separantur); antennis quam corporis dimidium brevioribus, fortiter compressis, articulis 3° leviter,—4°—10° valde transversis, 4° quam 3us paullo breviori. Long., 5 l.; lat., 1$\frac{3}{5}$ l.

This species would be reckoned, I think, by Mr. Waterhouse a true *Metriorrhynchus*. It differs from all the species resembling it in respect of colour (except *rufipennis*, Fab., and *brevirostris*, Waterh.), by its having scarcely any rostrum. From *rufipennis* (=*salebrosus*, Waterh.) it differs *inter alia* by its still shorter and wider rostrum, by the much shorter and wider joints of its antennæ, by the obtuse hind angles of its prothorax, and by the much more distinct lines separating the interstitial areolets of its elytra which in the front might be called intermediate costæ. *M. brevirostris*, Waterh., has a diagnosis of only three words, and the appended note merely states that the insect differs faom *erythropterus*, Er., by "the rostrum shorter, scarcely longer than broad." In the present species the rostrum is very much broader than long.

Victoria; Dividing Range.

M. mentitor, sp. nov. Fem. Niger, prothoracis elytrorumque lateribus anguste, et horum apice sat late, rufis; rostro fere nullo; prothorace 7-areolato; elytris costis longitudinalibus discoidalibus 4 instructis (his inter se sat æqualibus), interstitiis biseriatim areolatis (series lineis subtilibus sat manifestis separantur); antennis quam corporis dimidium vix brevioribus, fortiter compressis, articulis 3°—10° quam longioribus vix latioribus, 3° 4° que longitudine sat æqualibus. Long., 6 l.; lat., 2 l.

Near *M. cœnosus*, Lea, but differing by the hind angles of the prothorax quite obtuse the lines separating the areolæ of the elytral interstices very distinct in almost their whole length (a little obscure only in the middle of their length) and the considerably larger size of the insect; also in the antennæ and legs entirely black. In colour (except in the red edging of its prothorax), general build, and elytral sculpture, remarkably like the insect that Mr. Waterhouse described as *M. inquinulus*, but subsequently (on the ground of its peculiar prothoracic areolation) placed in his genus *Stadenus*. According to Mr. Waterhouse's

arrangement of the Australian *Lycides* this is a true *Metriorrhynchus.*

Victoria ; Dividing Range.

M. paradoxa, sp. nov. Mas. Niger, elytrorum apice sat late et margine externo (parte antica excepta) anguste rufis ; pro thorace 7-areolato ; rostro nullo ; elytris costis longitudinalibus discoidalibus 4 (his inter se æqualibus) instructis, costis lineis recte transversis (his ut costæ æqualiter elevatis) conjunctis ; antennis quam corporis dimidium paullo longioribus, sat fortiter compressis, articulis omnibus (2° excepto) quam latioribus longioribus, articulo 3° quam 1us duplo longiori, 3°—11° longitudine sat æqualibus modice serratis. Long., 4 l.; lat., 1$\frac{2}{5}$ l.

The well defined seven areolæ of the prothorax together with the remarkable elytral sculpture render this species easy to recognise. It does not appear to fall into any of the subgenera that Mr. Waterhouse has formed at the expense of *Metriorrhynchus.* Each longitudinal costa on the elytra is connected with that next to it by a regular series of perfectly transverse short costæ of the same elevation as the longitudinal costæ, and there is no trace whatever of intermediate longitudinal lines. Mr. Waterhouse would perhaps place this insect in his genus *Xylobanus.*

Victoria ; Dividing Range.

M. eremita, sp. nov. Mas. Niger, prothoracis lateribus margineque antico et elytrorum sutura (anguste) margine laterali (sat late) apiceque (vix in parte elytrorum septima) testaceo-rufis ; rostro latiori quam longiori ; prothorace 7-areolato ; elytris costis longitudinalibus discoidalibus 4 (his fortiter cariniformibus inter se æqualibus) instructis, interstitiis biseriatim areolatis (quam *M. erythropteri*, Er., manifeste minus grosse, præsertim in parte mediana ; series lineis subtilibus elevatis sat continue separantur); antennis quam corporis dimidium paullo longioribus, sat fortiter compressis, articulo 3° quam 4us vix longiori, articulis 3°—10° sat fortiter serratis, parte producta quam articuli pars cetera parum breviori.

Fem. antennis minus fortiter serratis. Long., 5—6½ l.; lat., 1$\frac{2}{5}$—2 l.

Rather closely allied to *M. monticola*, Blackb., and *marginipennis*, Lea ; from the former it differs *inter alia* by the much less coarse sculpture of the intervals between the elytral costæ ; from the latter by *inter alia* the discoidal costæ of the elytra being similar *inter se* and the structure of the antennæ. There is evidently something wrong in the numbering of the joints in the description of the antennæ of *marginipennis* of which it is

stated that the "second joint is concealed and the third slightly longer than the second, second to tenth subequal, eleventh elongate." I suspect this means that the fourth is slightly longer than the third, but it certainly cannot mean that the third is if anything longer than the fourth, which is the case in the species before me. The colouring of this insect (quite constant in all the examples I have seen) also differs from that of the two species with which I am comparing it, the black discal patch on the elytra extending from the inner margin of the external elytral costa to the outer margin of the sutural carina, and leaving the apex red for the length of scarcely one-seventh part of the length of the elytra. The intermediate longitudinal elevated lines on the elytra are strongest near the base (where they are scarcely different from the costæ) and are distinctly traceable nearly to the apex. This insect might be suspected of being a variety of *M. lineatus*, Waterh., but *inter alia* its antennæ are incompatible, for in the male they resemble those of *inquinulum*, Waterh. (same sex), as figured by Mr. Waterhouse; while those of *lineatus* (male,—not figured by Waterhouse) are like Mr. Waterhouse's figure of the antennæ of *Trichalus flavopictus*, Waterh.

Victoria; Dividing Range.

M. rufipennis, Fab. I have little doubt that Mr. Waterhouse is right in thinking (though he is not very confident on the point) that his *salebrosum* is identical with Fabricius' species.

M. marginatus, Er. I should say there is no doubt that *M. hæmorrhoidalis*, Waterh., is identical with this species. I cannot however agree with Mr. Waterhouse (Typ. Br. Mus., Lyc.) that his *hæmorrhoidalis* may be a colour var. of *rufipennis*, Fab. The two are unquestionably closely allied apart from colour; but there is a very marked difference in the antennæ, the produced piece of each joint beginning with the sixth being in *rufipennis* very much more slender than in *hæmorrhoidalis* (= *marginatus*, Er.).

CALOCHROMUS.

C. cucullatus, sp. nov. Sat elongatus; modice convexus; sat nitidus (elytris exceptis); elytris pubescentibus; niger, elytrorum margine laterali et parte postica tertia læte rufis; labro antice emarginato; antennarum articulis 3° 4° que longitudine sat æqualibus; capite antice profunde sulcato; prothorace fortiter transverso, antice parum angustato, lateribus modice arcuatis, angulis anticis valde obtusis posticis (superne visis) fere rotundatis, disco medio profunde longitudinaliter sulcato, sulci lateribus valde gibbis (præsertim postice), disci parte postero-externa valde obtuse tumido, basi parum manifeste bisinuata; elytris costis

modicis discoidalibus 4 instructis, parte inter suturam costamque subsuturalem in dimidia parte antica sat distincte carinata, interstitiis subtilissime granulosis.

Maris clypeo antice profunde trifido, processu intermedio spiniformi suberecto; femoribus anticis incrassatis; segmento ventrali penultimo in medio emarginato.

Feminæ clypeo antice minus profunde trifido, processu intermedio nec spiniformi nec erecto; femoribus simplicibus; segmento ventrali penultimo haud emarginato. Long., $4\frac{1}{2}$—$5\frac{1}{2}$ l.: lat., $1\frac{3}{4}$—2 l.

Allied to *C. nodicollis*, Bourg., but differing from it, *inter alia*, by the markings of the elytra much more widely than my observation of a good many specimens of *Calochromus* allows me to think compatible with mere colour variety. The elytra of *C. nodicollis* are described as being entirely ochraceous except a narrow basal border, while in the present species their marking consists of a large common patch touching the base but not quite reaching to the lateral margins and extending hindward to the length of two-thirds of the elytra and slightly narrowing towards its apex, so that the red margin gradually widens slightly from its base and the apical one-third of the elytra is entirely red. Thus the black patch bears a rough resemblance to a hood thrown back over the elytra from their base. This marking seems constant. There are various details in which this insect departs otherwise from the description of *C. nodicollis; inter alia* the interstices of its elytral costæ are said to be rugose whereas in the present species they are excessively finely granulated,—scarcely more than coriaceous, and *nodicollis* is said "to a casual inspection to remarkably recall *C. scutellaris*, Er.," whereas the present insect is a much more robust species of considerably wider form with very much longer antennæ. The measurements of *C. nodicollis* make it fully three times as long as wide; *C. cucullatus* is distinctly less than three times as long as wide. Of the other previously described *Calochromi*, none seem to have the remarkable clypeal sexual characters of this species,—some have the prothorax bicolorous (very remarkably so in *C. brevicornis*, Lea, and *pilosicornis*, Lea, in which the prothorax is said to be "yellow tinged with red," and those having a black prothorax (even if the clypeal sexual characters have merely been overlooked in the descriptions,—as may be the case in one or two that I have not seen) present strongly marked differences that make this species very distinct.

Victoria; Dividing Range.

C. simillimus, sp. nov. Præcedenti (*C. cucullato*) affinis; differt elytrorum parte communi nigra antice angusta (ultra costam primam haud extensa) sat longe ante medium dilatata (sicut

hinc fere ad apicem costam tertiam fere attinet) ante apicem sat abrupte truncata, prothoracis basi sat fortiter bisinuata (sicut certo adspectu anguli postici nonnihil retrorsum directi videntur). Long., $5\frac{1}{2}$ l.; lat., $1\frac{4}{5}$ l.

Apart from the characters noted above the description of *C. cucullata* is an accurate description of this insect, and therefore need not be repeated. The markings of the elytra are identical in all the specimens that I have seen. The difference in the form of the base of the prothorax furnishes a satisfactory structural character.

S. Australia; Adelaide District.

C. rostratus, sp. nov. Elongatus; minus convexus; minus nitidus; supra pubescens; niger, prothoracis lateribus et elytris totis aurantiaco-rufis; capite minus porrecto, antice rostro manifesto (hoc quam longiori sat latiori) instructo, inter oculos longitudinaliter minus profunde canaliculato; prothorace transversim subquadrato, longitudinaliter canaliculato (antice subtiliter, postice profunde), transversim carina obtusa (hac in medio minus perspicua) sinuatim antrorsum ex angulis posticis arcuata instructo, disco postice tuberculis obtusis 2 munitis, lateribus sinuatim subrectis, basi leviter bisinuata, angulis anticis fere nullis posticis fere rectis: elytris striatis, interstitiis angustis leviter convexis (alternis quam cetera vix magis definitis); antennis quam corporis dimidium vix longioribus, modice compressis, articulis 3^{c} 4^{c} que longitudine sat æqualibus.

Maris segmento ventrali septimo profunde emarginato.

Feminæ segmento ventrali septimo profunde fere ad basin triangulariter impresso et ad apicem emarginato. Long., 4 l.; lat., $1\frac{2}{5}$ l. (vix).

The comparatively slight exsertion of the head in this species together with the presence of a distinct rostrum and the scarcely noticeable dilatation of the front femora in the male renders this species very distinct from any other Australian *Calochromus* known to me. All these characters, however, seem to be present in some of the species from other countries described in Mr. Waterhouse's monograph of the genus (Cist. Ent., II.), the essential character of *Calochromus* among the *Lycides* being there regarded as the "absence from the elytra of distinct carinæ separated by rows of punctures" together with the presence of seven ventral segments. In the species before me an excessively short basal ventral segment is certainly present in the male; in the female I am not so sure of there being seven segments but probably there is an extremely short basal one which would be discernible if the hind body were broken off. The sculpture of the prothorax also differs from that of any other Australian

Calochromus that I have seen; a thick wheal-like edging commences at the posterior angles and proceeds a very short distance along the lateral margin and then curves inward and arches across the middle of the disc, being however narrowly interrupted on the middle line by the longitudinal median impression. There is an obtuse gibbosity on either side of the middle line immediately in front of the base and a somewhat deep excavation immediately within the hind angles. The prothorax is entirely margined with a thickened edging which however is not so thick as the wheal-like carina that crosses the disc.

S. Australia; taken by Mr. Jung on Yorke's Peninsula.

TENEBRIONIDÆ.

CHALCOPTERUS.

C. Kochi, sp. nov. Sat cylindricus; sat nitidus; niger, elytris metallico-versicoloribus (in disco cœruleis, latera versus aureo-viridescentibus, suturam versus purpurascentibus); capite crebre sat æqualiter punctulato, inter oculos quam antennarum articuli basalis longitudo fere angustiori; sulcis ocularibus nullis; antennis quam corporis dimidium sat brevioribus, articulo 3° quam 1us 2^{us}que conjuncti manifeste longiori, quam 4us 5^{us}que conjuncti manifeste breviori, articulis 8°—10° quam præcedentes multo brevioribus; prothorace quam longiori fere duplo (postice quam antice duplo) latiori, crebre subtiliter distincte sat æqualiter punctulato, lateribus (superne visis) pone medium fere parallelis, basi media sat anguste sublobata, angulis anticis obtusis; elytris æqualiter sat subtiliter (quam *C. Howitti*, Pasc., vix minus subtiliter) postice magis subtiliter seriatim punctulatis, interstitiis planis subtiliter (quam series permulto magis subtiliter) vix crebre punctulatis; prosterno sat distincte carinato; metasterno distincte punctulato et fortiter oblique rugato, episternis opacis leviter punctulatis; tarsis subtus nigro setosis, posticorum articulo basali quam 4us haud multo longiori; abdomine modice punctulato et longitudinaliter rugato. Long., 9½ l.; lat., 4⅘ l.

This extremely fine species is allied to *C. cupreus*, Fab., *brevipes*, Blackb., and *grandis*, Macl. From *cupreus* it differs *inter alia* by its entirely different colouration and (presuming my identification of that species to be correct) by its much more cylindrical form, very much more slender antennæ with quite differently proportioned joints and seriate punctures of elytra becoming much finer in the apical third; from *brevipes* it differs *inter alia* by its notably wider prothorax and much finer puncturation of the elytral interstices (so that the elytral series stand out much more conspicuously); and from *grandis inter alia* by

the much shorter basal joint of its hind tarsi. I am doubtful of the sex of the example before me (it is difficult to determine the sex of a *Chalcopterus* unless both sexes can be examined), but it is probably a female. In my tabulation of *Chalcopterus* (P.L.S., N.S.W., 1893) this species may be placed beside *cupreus*, Fab. (p. 60) though its prothorax is not quite "*fully*" twice as wide as long (but it is notably wider than in *brevipes*), from which it may be thus distinguished :—

J. Prothorax twice (or all but twice) as wide as long.
  K. Seriate puncturation of elytra not enfeebled behind [*cupreus*, Fab.]
  KK. Seriate puncturation of elytra becoming very feeble near apex ... ... *Kochi*, Blackb.

S. Australia ; Basin of Lake Eyre ; sent by Herr Max Koch.

C. gracilicornis, Blackb. (Tr. R.S., S.A., 1899, p. 45). The habitat of this species is N.W. Australia.

C. mundus, Blackb. (*l.c.*, p. 48). The habitat of this species is N. Queensland.

RHIPIDOPHORIDÆ.

EVANIOCERA.

E. persimilis, sp. nov. Mas. Picea, elytris rufescentibus; minus nitida; confertim subtiliter punctulata; cinereo-pubescens (lineatim in elytris); oculis modicis, subapproximatis (interspatio quam antennarum articuli basalis longitudo parum latiori separatis); antennarum articulis 1° compresso breviter piriformi, 2° parvo transverso, ceteris ramos elongatos singulos emittentibus, articuli 3ⁱ ramo quam ceterorum paullo breviori (a ramo articuli 4ⁱ vix longius quam ramus articuli 4ⁱ a ramo articuli 5ⁱ remoto); prothorace conico, basi bisinuata, lateribus (superne visis) vix sinuatis; elytris postice minus angustatis.

Feminæ antennarum articulis (basalibus 2 exceptis) sat fortiter serratis. Long., $2\frac{1}{2}$—$4\frac{3}{4}$ l.; lat., 1—$1\frac{1}{5}$ l.

Closely allied to *E. Meyricki*, Blackb., with similar elytral pattern (about six narrow vittæ of whitish pubescence on each elytron) and the same number (nine) of antennal rami; differing from it in the ramus of the third joint being fully three-fourths of the length of the longest ramus (in *Meyricki* it is scarcely more than half) and scarcely more distant from the second ramus than the second ramus is from the third. It is moreover a more robust insect, less narrowed behind, with the prothorax less elongate and having posterior angles less strongly directed hindward. The other previously described species having nine antennal rami are *pruinosa*, Gerst., and *perthensis*, Blackb., neither of which has elytra marked with longitudinal pubescent vittæ; moreover *pruinosa* has the first antennal ramus even shorter than that of *Meyricki*, a much more elongate prothorax,

&c.; while in *perthensis*, *inter alia*, the antennal rami are all less elongate and the antennal joints are shorter so that all the rami are notably more closely packed together than in the present my knowledge seen, the antennæ of which are not exactly species. The two species of the genus that I have not to described, are *Gerstäckeri*, Macl., and *Gerstäckeri* [Macl.?], Champ. which are so differently coloured that they are not at all likely to be identical with the present species. The rest of the described species have only eight antennal rami in the male. In my tabulation of the species of *Evaniocera* (Tr. Roy. Soc., S.A., 1899, p. 52) this species will stand beside *E. perthensis*, Blackb., from which it may be distinguished thus:—

C. Eyes divided ... ... *perthensis*, Blackb.
CC. Eyes normally emarginate ... ... *persimilis*, Blackb.

Victoria; in my collection; also in the collection of Mr. French.

E. perthensis, Blackb. When I described this species (*l.c.*, p. 53) I did not notice the remarkable character mentioned above In *E. nervosa*, *Meyricki*, &c., the eyes are very deeply emarginate, but the two lobes are connected perfectly distinctly; while in this species the two lobes are absolutely disconnected, so that the insect has four eyes,—a character which may perhaps have to be treated as generic eventually.

EMENADIA.

E. difficilis, Blackb. (Tr. R.S., S.A., 1899, p. 55). The habitat of this species is South Australia.

CURCULIONIDÆ.

BARIS.

B. orchivora, Blackb. Sat lata; minus nitida; glabra; picea (nonnullorum exemplorum elytris latera versus rufescentibus); rostro quam prothorax sublongiori, compresso, apicem versus nitido fortiter crebre punctulato et longitudinaliter strigato, scrobibus subtus conniventibus; oculis subtiliter granulatis; antennarum scapo oculum fere attingenti; prothorace confertim subgrosse punctulato; scutello modico granulato; elytris a basi retrorsum leviter angustatis, fortiter striatis, striis indistincte cancellatis, interstitiis crebre granulatis; femoribus sat elongatis vix clavatis, dente parvo armatis; tibiarum unco apicali parvo horizontali; unguiculis subparallelis, ad basin fere connatis. Long. (rostr. excl.), $1\frac{4}{5}$ l.; lat., $\frac{4}{5}$ l.

A very distinct species. It was bred in Sydney from the stems of a Queensland Orchid (*Dendrobium* sp.) and sent to me by Mr. W. W. Froggatt.

BRUCHIDÆ.

BRUCHUS.

B. lyndhurstensis, sp. nov. Rufo-castaneus, capite antennis apicem versus metasterno elytorum sutura maculisque nonnullis lateralibus et tarsorum apice obscurioribus; supra pube ochracea et albida indeterminate variegatus; subtus cum pygidio sat dense albido-pubescens; capite modice elongato minus lato (fere ut *B. rufimanus*, Schönh.) inter oculos longitudinaliter carinato; oculis subtiliter granulato (ut *B. rufimanus*); antennis sat brevibus sat robustis, articulis 5°—10° inter se sat æqualibus leviter transversis leviter serratis; prothorace conico, crebre subtiliter aspere punctulato; elytris subtiliter striatis, interstiis planis ut prothorax punctulatis; femoribus posticis inermibus.

Maris segmento basali ventrali fovea magna circulari (hac pube subtili flava in funda vestita) impresso. Long., 1 l.; lat., $\frac{3}{5}$ l.

Variat antennis minus obscuris, capite postice testaceo, elytris in sutura et ad latera magis late obscuris, pygidio nigro-maculato vel fere omnino nigro, femoribus posticis plus minusve obscuris.

A most variable species, if I am right in considering the specimens before me (which were taken by myself and others, in Central Australia in seeds of Cassia) as representing only a single species. The most distinctive character seems to be that on the basal ventral segment of the male, consisting in the presence of a large shallow circular impression placed anteriorly, and having a diameter equal to about two-thirds of the length of the segment on the median line. In some examples this impression is more sharply defined on the hind part of its outline than in others, and in some its floor is covered with fine yellow pubescence, which is wanting in others. I take these differences to be caused partly by abrasion and partly to be an instance of the variability in respect of development of sexual character so often found in species where such characters are of a very pronounced type. Only one species (*B. perpastus*, Lea) of *Bruchus* with unarmed hind femora has hitherto been described as Australian, and unfortunately the description of that insect does not refer to sexual characters—but its stating that the insect is black and of almost circular outline, with a triangular scutellum, seem to indicate clearly that it is not much like the present insect. In the species I am describing the scutellum is somewhat quadrangular, though appearing of different form according to degree of abrasion, position of prothorax, &c., but not definitely triangular in any specimen. In Mr. Lea's tabulation of *Bruchi* (Proc. L.S., N.S.W., 1898, pp. 637-8) the place of this species is beside *B. perpastus*, Lea.

Central Australia; Oodnadatta, Lyndhurst (Koch), Leigh's Creek, &c.

B. Oodnadattæ, sp. nov. Nigricans, antennis sordide testaceis apicem versus vix infuscatis, pedibus testaceis, femoribus (præsertim posticis) plus minusve nigricantibus, elytris ad apicem plus minusve distincte rufescentibus; supra pube nigricanti et albida indeterminate variegatus, subtus cum pygidio sat dense albido-pubescens; femoribus posticis ante apicem denticulo manifesto sed minuto armatis; cetera ut *B. lyndhurstensis.*

Maris segmento basali ventrali antice fovea parva ovali leviter impresso.

Differs from the preceding by its very different colouring, by the presence of an extremely small denticulation on the hind femora and by the very much smaller fovea (which is elongate oval, not circular) on the basal ventral segment of the male. In some examples the elytra are only vaguely reddish at the apex, in others there is an extremely well defined bright red apical spot. In Mr. Lea's tabulation of *Bruchi* (*loc. cit.*) the place of this species is beside *diversipes*, Lea, from which it differs *inter alia* by the minute size of the tooth on its hind femora.

Central Australia.

B. diversipes, Lea. I have an example of this species courteously sent me by Mr. Lea, and also numerous specimens of the larger insect from W. Australia, which he dubiously identifies with it. I doubt the identity of the two, although I cannot find any good structural character to distinguish them. Unfortunately my specimen of typical *diversipes* is a female. The basal ventral segment of the male of the larger insect is without any sexual fovea. Perhaps an examination of a male *diversipes* from N.S. Wales might show a valid distinction on the basal ventral segment.

B. quornensis, sp. nov. Niger, antennarum articulis basalibus 4, elytrorum disco apiceque et pedibus (femorum basi et tarsorum apice exceptis) rufo-testaceis; supra pube albida et testacea vel rufa variegatus; subtus cum pygidio minus dense albido-pubescens; capite modice elongato, inter oculos longitudinaliter carinato; oculis sat subtiliter granulatis; antennis sat elongatis, articulis 5°—10° robustis leviter serratis; prothorace transversim trapezoidali, antice minus fortiter angustato, crebre subtiliter ruguloso, elytris subtiliter punctulato-striatis, interstitiis planis fere ut prothorax asperis sed paullo magis subtiliter; femoribus posticis dente parvo acuto armatis.

Maris segmento basali ventrali nullo modo foveolato. Long., 1 l.; lat., $\frac{3}{5}$ l.

Variable in the colouring of the elytra. The base, suture and lateral margins are broadly piceous or black, but in some examples somewhat mottled with whitish or castaneous pubescence; the rest of the surface (a broad discal patch not reaching the base) is of lighter colour and is variegated with whitish and slightly reddish pubescence not differing much in colour, but each shade running longitudinally so as to give a faintly striped appearance; abraded examples have black elytra with a wide reddish discal vitta not reaching the base. The antennæ have their fifth and following joints much wider in comparison with the fourth joint than in the species described above, causing the antennæ to appear as consisting of a stem of four joints and a long serrate club of seven joints (the first three joints of which gradually increase in size). The tooth on the hind femora is much larger than that of *B. Oodnadattæ* but a little smaller than that of *B. diversipes* and does not seem to vary in development. In Mr. Lea's tabulation of *Bruchi* this species stands beside *B. despicatus*, Lea, from which it differs *inter alia* by the basal four (not three) joints of its antennæ testaceous and their series of serrate joints beginning with the fifth (not the fourth).

S. Australia; Quorn.

B. fabæ, Fab. I presume that the insect which Mr. Tryon reported (Tr. Nat. Hist. Soc., Brisbane, vol. I.) as *B. obtectus*, Say, is this species. Mr. Tryon does not say why he prefers Say's name; it is to be noted however that it is later than that of Fabricius.

B. pisi, Linn. In a note to his remarks on *Bruchus* (*loc. cit.*) Mr. Lea quotes Mr. Tryon as having reported a species from Queensland as "*B. pyri.*" Mr. Tryon, however, has no such name, but mentions "*B. pisorum.*" I presume both names are intended for *B. pisi*, Linn.,—indeed in the body of his paper Mr. Lea mentions *B. pisi* (without an author's name) apparently as the same species which in the note he calls *pyri*.

B. persimulans, sp. nov. Niger, antennis (his nonnullorum exemplorum articulos 6°—10° plus minusve infuscatos præbentibus), pedibusque (horum femoribus posticis basin versus et tarsorum articulo ultimo obscuris) testaceis, elytris rufis nigro-cinctis (apice rufo excepto); sat æqualiter cinereo-pubescens; antennarum articulis 4°—10° sat robustis leviter serratis; elytrorum interstitiis quam prothorax multo magis subtiliter sculpturatis, vix asperis; cetera ut *B. quornensis*.

Maris segmento basali ventrali nullo modo foveolato. Long., $1\frac{2}{5}$ l.; lat., $\frac{4}{5}$ l., vix.

Except in respect of the characters mentioned above, the description of *B. quornensis* applies to this species also. The

colouring of the derm in the two insects is very similar, but the pubescence of the elytra differs considerably, a fresh specimen of *quornensis* having a very mottled appearance while a fresh specimen of *persimulans* has an even vestiture of whitish pubescence. The present insect is considerably larger than *quornensis* and has very different antennæ, there being much less difference in size between the fourth and fifth joints and the fifth and sixth joints being *inter se* equally dilated, while in *quornensis* the fifth joint is notably less dilated than the sixth. *B. persimulans* also has a good deal of colour resemblance to partially abraded examples of some varieties of *B. lyndhurstensis*, but is readily distinguished from it by its longer antennæ, black prothorax, as well as by the presence of a tooth on the hind femora and the absence of sexual characters on the basal ventral segment. This species does not fit into any of the groups in Mr. Lea's tabulation, not having its prothorax and elytra either both red or both black.

Central Australia; Oodnadatta.

PHYTOPHAGA.

MEGASCELOIDES.

M. circumcinctus, sp. nov. Fem. Minus elongatus; pubescens; piceus, antennarum basi capite prothorace antice elytris (marginibus totis anguste piceis exceptis) pedibusque rufis; capite brevi lato sat fortiter punctulato; antennis filiformibus quam corporis dimidium sublongioribus; prothorace quam longiori plus quam sesquilatiori, subquadrato, convexo, subtiliter inæqualiter punctulato, marginibus omnibus sat rectis, angulis anticis subdentiformibus posticis obtusis; elytris sat crebre minus subtiliter punctulatis, lineis vix elevatis longitudinalibus circiter 3 instructis; femoribus leviter incrassatis. Long., $3\frac{3}{5}$ l.; lat., $1\frac{2}{5}$ l. (vix).

The insect described above has been in my collection for some considerable time placed doubtfully as belonging to the *Megascelides*. Mr. French has recently sent me an insect closely allied to it which being a male I can identify confidently with Mr. Jacoby's genus *Megasceloides* (it is probably the typical species); and by comparing my species with it I have satisfied myself that the former is a female of the same genus. It differs from the male in what are likely to be sexual characters by the intermediate joints of its antennæ scarcely dilated and its less strongly dilated femora. Specifically it differs from *M. pallidus* by its colouring (the prothorax piceous with its anterior one-third testaceous and the elytra narrowly and abruptly edged all round with piceous black), by its notably more transverse prothorax, the front angles of which are dentiform, and by the less numerous elevated lines on its elytra.

W. Australia.

EDUSA.

The following species while certainly, I think, a member of the group *Edusites*, differs from typical members of the genus *Edusa* by its unusually narrow parallel form and its entirely glabrous upper surface. Five *Edusoid* genera have been recorded as Australian, viz., *Edusa*, *Edusoides*, *Clepter*, *Thaumastomerus* and *Ocnida*. The insect before me certainly cannot be attributed to the second or third of those genera,—but the last two do not appear to me to have been satisfactorily differentiated from *Edusa*. *Thaumastomerus* was unknown to Dr. Chapuis (as it is to me) and he conjectured that it ought not to be separated from *Edusa*. Of *Ocnida* he says that its diagnosis does not contain any tangible character for identification,—in which opinion I agree with him. The following species is not any of those that have been attributed to those genera, and so far as I can make anything of the generic diagnoses it does not agree with them, nor can I find any marked structural character inconsistent with its place in *Edusa* which (as Dr. Chapius conceived it) included forms widely differing in superficial characters.

E. angustula, sp. nov. Sat angusta, sat parallela; supra glabra; subtus pilis erectis brevibus gracilibus sparsim vestita; metallico-versicolora (viridis, aureo cupreoque varie micans), antennis (his apicem versus infuscatis) palpis labro pedibusque testaceis; capite verticali, sparsius subtilius punctulato; antennis filiformibus apicem versus parum incrassatis, quam corporis dimidium parum longioribus; prothorace leviter transverso, ut caput (latera versus magis crebre) punctulato, antice modice angustato, lateribus arcuatis, angulis anticis obtusis nullo modo productis, posticis obtusis (his, in prosterno visis, dentiformibus); elytris crebre punctulatis, apicem versus nonnihil punctulato-striatis, totis fortiter rugatis; femoribus (sexus observati) haud dentatis sed subtus late subangulatim dilatatis. Long., 2 l.: lat., $\frac{1}{2}$ l.

In my tabulation of the species of *Edusa* (Tr. R.S., S.A., 1891, pp. 142-3) this insect falls beside *glabra* (at the end of the table) from which it may be thus distinguished:—

C. Form widely oval ... ... *glabra*, Blackb.
CC. Form narrowly parallel ... ... *angustula*, Blackb.

I have seen four examples of this species, among which I find no conspicuous sexual differences. Probably they are all females.

W.A.; sent by Mr. French.

RUPILIA.

R. angulaticollis, sp. nov. Ovata; minus nitida; supra obscure cœrulescens, capite antice antennis (apice excepto) prothoracis marginibus omnibus scutelloque plus minusve

distincte rufescentibus; subtus obscure rufa, abdomine obscure cœruleo viridimicanti, pedibus piceis plus minusve rufescentibus; capite inter antennas longitudinaliter excavato minus perspicue punctulato, postice planato sparsim sat grosse vix fortiter punctulato; antennis robustis minus elongatis, articulis 1° 3° 4° que longitudine inter se sat æqualibus; prothorace quam longiori duplo latiori, crebre aspere vix rugulose punctulato, margine antico quam basalis vix angustiori (ambobus sensim elevatis), lateribus ante medium fortiter angulatis (hinc antrorsum et retrorsum convergentibus); elytris parum dehiscentibus, haud longitudinaliter impressis, crebre minus subtiliter subaspere nec rugulose punctulatis; scutello lato, fere ut elytra punctulato.

Maris elytris ultra segmentum ventrale penultimum attingentibus minus latis; feminæ segmenti penultimi medium vix attingentibus sat latis. Long., 3—3½ l.; lat., 1⅘ l.—2 l.

Differs from *R. ruficollis*, Clk., *inter alia*, by its much more strongly transverse prothorax and its much longer elytra. *R. viridi-ænea*, Clk., is not described in a manner to allow of very satisfactory comparison, but the present species is very differently coloured, and the phrase "*capite inter oculos transverse foveolato*" does not describe at all correctly the sculpture of the head of the present species. In *R. impressa*, Blackb., and *brevipennis*, Blackb., *inter alia multa*, the prothorax is very much more nitid and less conspicuously punctulate. *R. rugulosa*, Blackb., has very much more rugulose sculpture, and *R. excelsa*, Blackb., besides being very differently coloured has *inter alia*, a less transverse prothorax (its width to its length down the middle as 8 to 5) which is traversed by a very strong and conspicuous transverse sulcus.

N. Queensland.

R. approximans, sp. nov. Ovata; modice nitida; obscure rufescens, elytris obscure cyaneis violaceo-tinctis; capite sparsissime punctulato, linea longitudinali subtili impresso, hac ut fovea elongata profunda inter antennas dilatata; antennis elongatis, articulo 3° quam ceteri sat longiori; prothorace quam longiori sesquilatiori, longitudinaliter late canaliculato, subfortiter minus crebre (ad latera sat crebre), punctulato, latitudine majori antice sita, margine antico late elevato-crassato, lateribus (desuper visis) ab apice ultra medium leviter subrecte (hinc ad basin valde fortiter) convergentibus; elytris modice dehiscentibus, a basi retrorsum breviter minus perspicue impressis, confertim subtilius punctulatis; scutello modico.

Maris antennis ultra elytra media attingentibus; elytris segmentum ventrale penultimum medium attingentibus.

Feminæ antennis elytrisque nonnihil brevioribus.

Var. elytris antice suturam versus rufescentibus. Long., $4\frac{1}{2}$—$5\frac{1}{2}$ l.; lat., 2—$2\frac{2}{3}$ l.

Differs from the description and figure of *R. ruficollis*, Clk., and *brevipennis*, Blackb., *inter alia*, by its much longer and more ample elytra, from *R. viridiænea*, Clk., by the same characters as *angulaticollis* differs by, from *rugulosa*, Blackb., by its non rugulose sculpture, from *angulaticollis* by its very different antennæ, and from *excelsa*, Blackb., by the sculpture of its prothorax. It is near *R. impressa*, Blackb., but differs from it by the strongly and widely thickened front margin of its prothorax, the much closer and more distinct puncturation of that segment, &c. In *R. impressa* there is a transverse ill-defined gibbosity on the prothorax, but it is situated distinctly behind the front margin.

N. Queensland.

MONOLEPTA.

M. cognata, Blackb. This insect,—described from N. Queensland,—has been sent to me by Mr. French as taken in W. Australia.

COCCINELLIDÆ.

LIPERNES.

This name (which I used for a *Coccinellid* genus, Tr. R.S., S.A., 1888, p. 211) I find had been previously used by Mr. Waterhouse for a genus of *Lycides*. I therefore propose as a substitute for my name *Notolipernes*.

Sulvanite: a New Mineral.

By G. A. Goyder.

[Read June 5, 1900.]

Some specimens were sent to the Assay Department of the Adelaide School of Mines and Industries for assay for copper by Mr. E. Meylan, of Port Pirie, who stated that they were obtained from a new mine near the Burra.

During the analysis for copper I found that they contained vanadium, and therefore wrote for further samples, which Mr. Meylan promptly sent.

On examination these proved to consist of malachite, azurite, vanadium ochre, quartz, calcite, gypsum, and a metallic mineral, consisting principally of copper, sulphur, and vanadium.

A small piece of this mineral, as free as possible from associated minerals, was powdered and digested with acetic acid (which removed some malachite and calcite), washed, dried, and analysed. There was not sufficient for an accurate analysis in detail, but the following figures were obtained :—

Per cent.	Per cent.	Per cent.
Copper, 58·82	Vanadium, 11·88	Sulphur, 26·44

the balance being silica, lime, and a trace of iron.

The ratio of copper to vanadium was confirmed by a duplicate analysis of a smaller sample by a different method of analysis.

The mineral was found to contain no sulphur in the form of sulphate, and on heating in a closed tube it gave off no sulphur, from which it would appear that the copper must be in the form of Cu_2S, with the vanadium as V_2S_3. The ratio of Cu_2S to V_2S_3 in the sample analysed is 3½ to 1, but an analysis of some other specimens not so pure proved them to contain an oxidized vanadium mineral with a smaller relative proportion of copper, so that the composition of the mineral is most probably $4Cu_2S$, V_2S_3, which constitutes it a basic sulpho-vanadite of copper.*

The samples sent me were all in a more or less oxidized form, and as the mineral is not distinctly crystalline, and is penetrated by oxidised products almost throughout, its physical properties cannot be accurately ascertained.

---

* Subsequent analyses show that the mineral is a sulpho-vanadate of copper, $3Cu_2S$, V_2S_5.

The lustre appears sub-metallic, and the colour bronze, the specific gravity over 4, and the hardness 3·5.

As far as I can ascertain from the publications to hand, there is no record of any unoxidized vanadium mineral.

Mr. Meylan has promised to send me some further samples, and should the mine be worked deep enough, some of the pure unoxidised mineral may yet come to hand, in which case further analyses will be made and the physical properties more accurately ascertained.

Evidences of Extinct Glacial Action in Southern Yorke's Peninsula.

By Walter Howchin, F.G.S.

[Read June 5, 1900.]

Glacial deposits have already been described in the Transactions of this Society as occurring on the eastern and southern shores of Gulf St. Vincent, and in most cases such deposits extend seawards and pass from view below low-water mark. It may, therefore, be inferred that the southern portion of the present gulf occupies an eroded hollow or depression in what was formerly an extended area of glacial till. On this assumption it seemed highly probable that the southern portions of Yorke's Peninsula would be included in the extinct glacial field. This supposition has been amply confirmed by discoveries made during Easter week of the present year. The southern portions of the Peninsula have a lateral extension, shaped like a human foot; the northern and southern coasts of this area were visited, and very instructive sections of the glacial beds were observed, whilst many localities inland furnished confirmatory evidences of the previous existence of ice on a large scale.

Southern Coast.

Troubridge Hill.—The first locality visited was Troubridge Hill, about ten miles from Edithburg, in a south-west direction, viâ Honiton. The sea-cliffs near the Hill are composed of calciferous sandstones capped by travertine limestone. The sea breaks at the base of the cliffs, which are being rapidly undermined. At a distance of about half a mile to the west from Troubridge Hill the base of the Eocene beds is exposed, and the latter are seen to rest on an eroded surface of glacial till. The Eocene beds are here reduced in thickness to a layer of three feet, consisting of loosely held comminuted fragments of polyzoa, with countless numbers of the small echinoderm, *Fibularia gregata*. The occurrence of this echinoid in the bed referred to fully justifies its specific name, as it is mostly aggregated in clusters, varying in size up to a foot in diameter.

The following is a section of the cliffs as seen at this spot :—

1. *Recent*—Travertine limestone	10 feet
2. *Eocene*—Fossiliferous (*Fibularia gregata*) limestone	3 "
3. *Pre-Tertiary*—Glacial till with erratics; thickness unknown; height exposed above sea level ...	8 "

The till has the character of a red clay with bluish streaks, and rises suddenly in the cliff face in the form of one or two nodular inliers, around and over which the sediments of the Eocene sea has gathered. The clay carries erratics to a limited extent, but numerous stones of this character, liberated by the waste of the cliffs, lie at their base and along the beach.

About a mile further to the westward the glacial clay is again seen in a much more important exposure, extending in a line of cliffs for about a mile in an east and west direction. The cliff face has a maximum height of about 50 feet, and the thickness and character of the strata vary within the distances of a few yards in a very remarkable manner. The following two sections can be seen on the same horizon within a distance of less than one hundred yards:—

EASTERN SECTION.

1. *Recent*—	Travertine limestone	20 feet
2. *Pre-Tertiary* (*Glacial*)—	Dark-coloured clay	10 "
	White and pink-coloured argillaceous sands, base not exposed; thickness above sea level	20 "

WESTERN SECTION.

1. *Recent*—	Travertine limestone	3 "
	Calcareous sand rock, (?) raised beach	8 "
	Travertine limestone	6 "
2. *Pre-Tertiary* (*Glacial*)—	Dark to reddish clay	6 "
	White kaolinised clay with red patches, angular grit and erratics; thickness above sea level	27 "

In the second of the above cliff sections there is what may be a raised beach deposit intercolated between two beds of travertine. It is composed, to the extent of three-fourths of its mass, of water-worn calcareous sand, and the remainder of fine quartz sand. The bed does not exhibit false bedding, as it would probably have done had it been wind blown, and, in weathering, it splits up by vertical jointing which gives it an appearance of a decomposed basaltic rock. If it be a raised beach, the lower bed of travertine in the section represents an old land surface that was (subsequent to its formation) submerged below high-water mark, and, at a later period, was raised again and received its second deposit of travertine limestone.

The white kaolinised glacial clay of this section is a remarkable bed, and has a peculiar chalk-like appearance as seen in the cliff face, but the presence of undoubted erratics scattered promiscuously through its mass, places its origin

beyond question. The erratics of the coast show that the ice must have passed over a granitic country in which the felspathic constituents of the rock greatly preponderated, and the kaolinised features of the clay on some parts of this coast may be caused by the waste produced by such a felspathic bed rock.

The beach in front of this line of outcrop is strewn with erratics of all sizes—quartzites and granites being in greatest numbers. One of these, a large tabular mass of coarse-grained, pink-colored, porphyritic granite, lying between tide marks, measured fully twenty feet in diameter.

The Eocene beds are absent from this section.

Port Moorowie is situated on the southern coast about ten miles south-west of Yorketown, and about six miles west of the glacial beds near Troubridge Hill, already described. A good exposure of boulder clay, carrying numerous erratics, extends for about a mile near the jetty, chiefly on its eastern side. The beds as seen in section in the cliffs make a low anticline with a maximum height of about 36 ft., exhibiting the following order:—

1. *Recent*—	Travertine and calcareous marls	15 feet
2. *Pre-Tertiary* (*Glacial*)—	Reddish clay, with pipeclay bands ...	10 "
	White to bluish clay, with dark-red patches and streaks, carrying erratics; thickness exposed above sea level ...	11 "

The boulder clay of this section shows a general resemblance to the beds of the same age observed on the coast further to the east, and which have already been described. In the westerly outcrops of the Troubridge Hill beds (as also at Port Moorowie), the upper part of the clay, varying from six to ten feet in thickness, is apparently marked off from the underlying clay by a bedding plane. I saw no stones in this upper layer, the absence of which may raise some doubt as to its glacial origin, although such negative evidence cannot be taken as conclusive, as considerable bodies of undoubted glacial clay sometimes occur in South Australia in which no erratics are visible. I have included the layer in question provisionally in the glacial series, but further observations may show that it consists of re-arranged material from the underlying till bed, and belongs to a later period.

Erratics of small to moderate size are common on the beach at Port Moorowie. At one mile east from the jetty a boulder of grey granite, with large crystals of orthoclase giving it a porphyritic character, was observed, and measured at seven feet by four feet.

Northern Coast.

Point Turton.—An interesting geological section was found at Point Turton, situated on the shores of Hardwicke Bay, about six miles in a north-westerley direction from Warooka. The cliffs present a good face of rock as the Eocene limestone, of which the cliffs are chiefly composed, have been quarried for flux. The section that is exposed near the jetty is a very remarkable one, as it embraces no less than four distinct geological formations separated by three lines of unconformability.

The following is the order of occurrence:—

1. *Recent*—	Travertine limestone, variable in thickness up to	20 feet
2. *Miocene*—	Reddish, mottled clay, preserved in eroded hollows of lower Tertiary limestone; thickness *nil* to... ...	20 "
3. *Eocene*—	Pink-coloured fossiliferous limestone; variable in thickness up to	35 "
4. *Pre-Tertiary (Glacial)*—	Boulder clay, with glaciated erratics; thickness unknown; exposed above low water	15 "

The Miocene clay is best seen at a spot about a hundred yards west of the jetty, and has been preserved from denudation through occupying an eroded trench in the Eocene limestone, the latter having been nearly cut through by the eroding agents.

The Eocene limestone of the section is, as a whole, an extremely compact and pure carbonate of lime. It has been subjected to considerable alteration and reconstruction *in situ*, a secondary deposit of calcium carbonate having been precipitated within the interstices of the fossiliferous bed imparting to it a greater compactness. In some places most beautiful slabs of polyzoal stone, with the fronds weathered into strong relief, can be seen. The great purity of the stone makes it valuable as a fluxing agent.

The Eocene beds rest unconformably on the eroded surface of the glacial clay, the line of junction being very sharp.

The boulder clay is exposed for some distance in a variable thickness up to fifteen feet, and passes below sea level. The varying thickness of the bed is evidently the result of subærial waste that took place in pre-Tertiary times, before the old land surface was submerged by the Eocene sea. The clay is very compact, except where it is subjected to wave action below high-water mark, and even in that position it maintains a good hard floor that can be walked over without discomfort.

Immediately under the Tertiary limestone the clay is much impregnated with dendritic manganese, and the upper portion of the bed, notably the first three feet, is largely iron-stained. Many of the included boulders have formed a centre of segregation for the peroxide of iron, being thickly coated with this substance, giving them an appearance of nodular ironstone. When broken, however, the unaltered stone is seen to occur below the ferruginous crust. Beneath this iron-stained layer the clay is dark-colored in shades of bluish-black. When seen in plan on the beach (horizontal to the bedding), an extensive system of jointing can be recognised, the joint planes crossing each other at various angles.

The erratics contained in the clay are for the most part strongly striated or polished by ice action. The shingle of the beach consists mainly of erratics that have been liberated from the boulder clay through wave action on the cliffs. A large granite boulder occupies a position between tide marks, and measures three feet six inches in height.

Inland Localities.

(*a*) *Warooka.*—The township of Warooka stands on a hill of boulder clay that has been eroded on three sides. On the north side of the township in Section 200 (Hundred of Moorowie), a dam has been excavated in this clay. About a dozen small erratics—chiefly quartzite and granite—were counted within a short distance of the excavation. The out crop becomes more characteristic as it is followed around the eastern and southern sides of the ridge, in Section No. 201. Near the extremity of the eastern spur a granite boulder, two feet in diameter, lies in the paddock. There are also about a dozen smaller fragments of granite lying around, which have probably been broken from the larger mass. The stone is coarse-grained with large crystals of orthoclase, in bunches and veins, resembling the granitic outcrops at Corney Point. On the south side of the ridge is another erratic of pink-colored granite, carrying black mica, about the same size as the one just described; and not far distant from the last-mentioned a third erratic was found, being a close-grained bluish quartzite, with polished face, and heavily scratched.

The outcrop of boulder clay was followed across the road dividing the Hundreds of Moorowie and Para Wurlie, and more granites were picked up in Section No. 23 of the latter Hundred.

A few small weathered pieces of Eocene limestone were seen on the north flanks of Warooka Hill, but whether such are the remains of a small outlier of rocks of this age in the

neighborhood, or were carried there, I am unable to say. To all appearance the only deposit superior to the glacial clay in the neighborhood is a thin crust of travertine limestone which lies directly on the boulder clay.

(*b*) *Corney Point Road.*—A large erratic occurs near the main road from Warooka to Corney Point. It is situated on the north side within about twenty yards of the road in Section No. 148, Hundred of Carribie, about two miles east of the Dairy Station, and seven miles from Corney Point. Its large size and isolated character has attracted general attention in the district, and has been recorded on the Government Map as the "Granite Rock." It measures above ground 7 ft. x 5 ft., but to all appearance its actual size is much greater. It is not a "granite rock" but a greyish-colored, granular, hornblendic schist, having a close resemblance to some of the highly metamorphic rocks on the coast at Corney Point. From the effects of weathering it has split into several pieces—the measurements given are intended to include the block as a whole. The occurrence of this transported stone in the position described, is interesting, as it marks the most westerly point that I was able to note the presence of glacial deposits.

(*c*) *Lake Fowler.*—This is the largest of the numerous salt lagoons that are scattered over the southern portions of Yorke's Peninsula. It is situated about four miles south of Yorketown, and is more than ten miles in circumference. The Lake occupies a depression in the boulder clay, proof of which can be seen at various points both on the lake bottom as well as in the cliffs that surround its margin. The most interesting assemblage of glacial features met with in my visit was on the north side of the Lake, in Section No. 178 (Hundred of Melville) at a spot that can be reached by a path from the road, through a slip panel, and across a field. Near where the path strikes the lake the sloping bank contains a group of twelve large pieces of pink-colored granite, having but a slight elevation above the ordinary level. The group measures ten feet by six feet, and was probably only one piece orginally, but has split along joint planes as the result of weathering.

About eighty yards to the westward of this erratic, other two huge granite blocks can be seen standing in the mud of the lake about a dozen yards away from the base of the cliff. On examination it was evident that the two fragments had been originally one block, the vertical fissure having probably occurred after it had become stranded in its present position. Conjointly they measure six feet six inches high and eight feet wide. Lying around this great erratic are

some half dozen other granite boulders varying in size up to several feet in diameter.

A short distance furtner to the westward can be seen two enormous masses of close grained bluish quartzites lying endways to the base of the cliffs. The first of these measures thirteen feet six inches by five feet six inches; and the second, which is separated from its companion by only a few feet, is almost as large. Similar boulders of a smaller size are strewn in the vicinity. It must have been ice of great transporting power that could carry stones of such a size as described.

The cliffs of the Lake near these erratics are about twenty feet in height, and consist intermittently of clay and sand rock. The change from the one feature to the other is often very abrupt. The clay is generally very compact, grey in color, with red patches; whilst the sand-rock may be colored white, yellow, or a deep brick-red. The stratigraphical lines are often very bewildering. In places no bedding planes can be detected, and in others they rapidly alter from the horizontal to nearly vertical direction, accompanied with contortions.

(*d*) *Munkowurlie Lagoon.*—This is a long narrow lagoon running parallel with the road between Yorketown and Port Moorowie. The widest portion of the lagoon is at its southern end, and on the eastern side of this larger basin in the lake two granite boulders are conspicuous. They are visible from the public road at a distance of about a quarter of a mile.

(*e*) *Moorowie Head Station.*—Situated about ten miles north-west of Yorketown on the edge of the Great Swamp country. I am indebted to Mr. Matthews, of Yorketown, and to Mr. Fowler, of Yararoo, for calling my attention to two erratics of granite which occur near this Station. I was unable to visit the locality, but the independent description given by the gentlemen named agree in every particular. One of the stones referred to measures three feet by eighteen inches, and lies on the east side of the main road in Section No. 38, Hundred of Moorowie. Mr. Fowler describes it as "red granite similar to the granite seen in the cliffs at Cape Spencer." The second of these boulders is described as much larger than the one just referred to, estimated at five feet by three feet, lying on the north side of a small lagoon in Section No. 37, about three-quarters of a mile from the first mentioned.

(*f*) *Lagoon at Pentonvale Head Station.*—Mr. Matthews, of Yorketown, has a granite boulder in his yard that had been brought from the above lagoon as an object of interest. The

locality is about three miles north-east of Yorketown. The stone is not so coarse in the grain as many of the erratics of the district, and was probably derived from a grey colored granite, as the evidence of this still remains, although the block, as a whole, is now of a deep red color from penetrating iron stains. The mica constituent is Biotite.

(*g*) *Well-Sinking at Yorketown.*—Sinking for water has been extensively tried throughout the district with varying success. All such sinkings have been in stiff clay, and I have learnt by enquiries that the occurrence of isolated stones in the clay is a common thing. Mr. Matthews, of Yorketown, has kindly placed in my hands a fragment of a granite boulder that was met with in sinking a well at Yorketown. It was found at a depth of 60 ft. from the surface, and has a distinctly polished face on one side. In no instance, so far as I could ascertain, was the clay bed penetrated to the bed rock in these sinkings.

(*h*) *Government Bore in Tocchi's Lagoon.*—In 1890 the Government put down a trial bore at the northern end of Tocchi's Lagoon, situated in Section No. 291, Hundred of Melville, about a mile east of Yorketown. Through the courtesy of Mr. J. W. Jones, Conservator of Water, I am enabled to give the following particulars of the strata passed through in the bore:—

	ft.	in.
Black mud	2	0
Dark clay with gypsum	28	0
Dark clay	270	0
Hard sandstone	3	0
Sandy clay	1	6
Very hard blue rock	0	11
Bore stopped at	305	5

The above sinking was evidently in the boulder clay of the district, and shows a local development of, at least, something over 300 ft. Work was stopped on meeting a hard rock which was penetrated to the extent of eleven inches. The occurrence of a hard rock in such a formation could not be taken as definite proof that the base of the clay bed had been reached. It is extremely probable that the point at which the bore was stopped was not *bed rock*, but an included erratic that had come in line with the sinking and given the false impression that bottom had been touched. The section is, however, an extremely interesting one, and supplies evidence of the great thickness of glacial deposits that occur over the southern portions of the peninsula.

Concluding Remarks.

In the observations now detailed a very large area has been added to the known extent of the extinct glacial field of South Australia. The glacial outline has not only been carried across Gulf St. Vincent, but it is clear that practically the whole of the southern portion of Yorke's Peninsula, measuring, roughly, forty miles by twenty miles, has been at one time under glacial conditions. This conclusion has been forced upon me from the widely distributed proofs of ice action on the northern and southern coasts as well as throughout the inland districts. With the exception of a few outliers of Eocene limestone and some superficial deposits, the geology of the inland country is of a uniform character, and can be summed up in one great clay formation—the glacial clay. A unique feature of the district is the abundance of salt lagoons, of which there are no less than 200 recorded on the official maps within the area under consideration. There can be little doubt that the glacial clay underlies these lagoons and imparts to them the retentive quality, so that these saucer-shaped depressions, receiving the drainage of the country, play the part of evaporating pans and concentrate its salts. The waste of this clay along the banks of the lagoons leads to the exposure of the erratics belonging to the formation, some of which have been noted in this paper.

Another important datum line has been supplied by these observations bearing on the age of the glacial cold in these latitudes. At Hallet's Cove, on the opposite side of the Gulf, the evidence shows that the glacial deposits were laid down in pre-Miocene times. In southern Yorke's Peninsula the geological age of these deposits has been thrown back yet one more step through their occupying a stratigraphical position inferior to the Lower Tertiary. There is, moreover, clear proof of stratigraphical unconformability in the eroded* surface of the glacial clay on which the marine beds of the Older Tertiary rest. It is, therefore, I think, clear that the glaciation must be referred to pre-Tertiary times, and cannot be newer than a Cretaceous or Cretaceo-Eocene age.

The discovery of glacial clay inferior to the Eocene beds at Troubridge Hill and Point Turton will contribute to the correlation of beds of a similar character in other parts of the colony. On the north side of the mouth of the Onka-

---

* At Corney Point, where the metamorphic rocks rise above sea level, there is a thin layer of Eocene limestone in a limited patch resting upon the primary rocks. The glacial clay is absent. At this elevation it may have been originally a thin deposit, and therefore easily denuded before the bedrock sunk below the level of the Eocene sea.

paringa, a clay in all respects similar to the glacial clays of southern Yorke's Peninsula, rises from beneath the fossiliferous Eocene beds with a northerly rise. A similar clay underlies the Eocene of Queenstown, Kangaroo Island, referred to by the author in a previous communication. From the apparent absence of erratics in these exposures some hesitation has hitherto been felt in referring the beds to the glacial age, but the evidence now available has greatly strengthened this supposition, and makes it almost certain that they belong to the same formation.

We have no reason to conclude that the extent of the glacial area in South Australia has even yet been fully determined. The limits of the evidence on Yorke's Peninsula, in a northernly direction, have not been fixed, and it is possible that the ice of a long past age may have left its impress on the southern portions of Eyre's Peninsula much further to the west. It is in these directions that further investigations should be especially made.

My acknowledgments are due to Mr. E. H. Matthews, of Yorketown; Mr. C. S. Keightly, Warooka; Mr. James Caldwell, junr., Honiton; and Mr. William Fowler, Yararoo, for information and other facilities by which I was enabled to utilise the short time at my disposal to the best advantage.

CONTENTS.

PAGE.

Clark, E. V.: Geological Notes on the Cliffs separating Aldinga and Myponga Bays 1

Turner, Dr. A. Jefferis: New Micro-Lepidoptera, mostly from Queensland 6

Hall, Robert: Notes on a Collection of Bird Skins from Kalgoorlie, W.A. 24

Blackburn, Rev. T.: Further Notes on Australian Coleoptera (xxvi) 35

Goyder, G. A.: Sulvanite—A New Mineral 69

Howchin, Walter: Evidences of Extinct Glacial Action in Southern Yorke's Peninsula 71

TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XXIV., Part II.

[WITH THREE PLATES.]

EDITED BY PROFESSOR R. TATE.

ISSUED DECEMBER, 1900.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

Supplementary List of Plants from Mount Lyndhurst Run.

By Max Koch.

[Read June 5, 1900.]

In my lists of plants collected on Mount Lyndhurst Run, published in September, 1898, 334 species of indigenous plants were recorded. In the following supplementary list I enumerate 56 species. In addition to the 390 indigenous species, about 20 of introduced plants were noticed, of which *Sonchus oleraceus* and *Erodium cicutarium* may be regarded as well established.

Most of the plants of this list were named by Prof. R. Tate, Adelaide, and some by Mr. J. H. Maiden, Director of the Botanic Gardens, Sydney.

The most of the species are more or less rare in District S., and some 25 of them have not been recorded from there before; these I have marked by asterisk.

Cruciferæ.

*Erysimum lasiocarpum, *F. v. Mueller.*
Lepidium leptopetalum, *F. v. M.*
Sisymbrium filifolium, *F. v. M.*

Rutaceæ.

Geijera parviflora (?), *Lindley.* Collected by W. Langley.

Zygophylleæ.

*Zygophyllum crenatum, *F. v. M.* Collected by J. Langley.
*Zygophyllum hybridum, *Tate.*
*Zygophyllum Kochii, *Tate.* First seen by J. Langley, Trinity Well.

The genus Zygophyllum had occupied my attention during last spring, for I noted in the preceding year various forms which seemed to me different from those described in the handbooks at my disposal. Fortunately, almost all known species of Zygophyllum were growing in my neighbourhood, with the exception of *Z. glaucescens*, which was erroneously enumerated in my list of 1898. Professor Tate upheld me in my assumption of having found several new species, two of which he described and named (*vide* Tr. R.S., October 3, 1899, pp. 289-291).

In addition to these, the learned Professor admitted the occurrence of micromorphs as regards the corolla of *Z. ammophilum.* My No. 164 is the typical form of *Z. ammophilum ;* leaflets elliptical to linear cuneate, entire ; petals white, stamens four, seeds two in a cell, outer skin of seed rough (not shining). No. 458, *Z. ammophilum*, var.; petals white, stamens eight, fruits and seed the same as No. 164. No. 457, *Z. ammophilum*, var. or new species (?) ; leaflets broadly cuneate, notched ; petals yellow, stamens eight, fruits truncate, rounded at the base, deeply angled ; seeds one in a cell, of an oval shape—the outer skin of the seed is smooth and polished ; a small prostrate annual. It will be seen this form differs from the typical form in—

(1) Foliage—164 leaflets entire ...	... 457 leaflets notched
(2) Colour of corolla—164 white	... 457 yellow
(3) Number of stamens—four ...	... eight
(4) Number of seeds in a cell—two	... one
(5) Form of seed—almost three angular	... oval in outline
(6) Outer coat of seed—dull and rough	... smooth and polished

I have supplied Prof. Tate with more material to work upon, and would not be surprised if he decides to raise No. 457 to specific rank. This form being prostrate in its habit, and the smallest of the genus, I suggest as an appropriate name *Zygophyllum humillimum.*

Malvaceæ.

Plagianthus glomeratus, *Bentham.*
*Sida intricata, *F. v. Mueller.*

Euphorbiaceæ.

Phyllanthus Gunnii, *J. Hooker.* A shrub.

N.B.—*Phyllanthus rhytidospermus* should be struck off my list of 1898.

Chenopodiaceæ.

An examination of Prof. Tate's Herbarium at the University has convinced me that the following species in list 1898 should be struck off :—

Atriplex leptocarpum, *F. v. M.*, for which I now assign *A. angulatum*, var., as the correct name.

Bassia bicornis, for which *B. diacantha* seems to be a better reference.

Amarantaceæ.

Ptilotus Hoodii, *F. V. Mueller.*

Leguminosæ.

Further study has revealed the fact that *Glycina tabacina*, in list 1898, is wrong, and should be Glycine sericea, *Bentham.*

Acacia salicina, *Lindley.*

Acacia cibaria, *F. v. Mueller.* This tree, or often shrubby tree, resembles so much in habit, foliage, and form of flowers to *Acacia aneura* that the species could not be defined until ripened fruits were obtained. *Acacia cibaria* is the species the seeds of which the blacks gather for food, and it is called by them *Mulka*, or by another tribe *Wodnera*, the same as *Acacia aneura.*

Both species are highly valuable as fodder for cattle and horses, and are often cut down for sheep in protracted droughts.

Ficoideæ.

*Mesembrianthemum australe, *Solander.* Collected by W. Langley, Knob Well.

Aizoon zygophylloides, *F. v. M.* The form with pink sepals, No. 354, is growing abundantly on the salt plains near Catt's and Publichouse Springs, north of Trinity Well.

Myrtaceæ.

Melaleuca trichostachya, *Lindley.*

Melaleuca parviflora, *Lindley.* Black Teatree.

Loranthaceæ.

Loranthus exocarpi, *Behr.*

A form with yellow petals, and green at the summit, is often found.

Compositæ.

*Aster decurrens, *Cunningham.*

*Podocoma cuneifolia, *R. Br.*, var. 348. Leaves pinnate, and flowers much smaller than the legitimate form.

*Podocoma cuneifolia, *R. Br.*, var. 476. Leaves twice pinnate.

Minuriella annua, *Tate.* A small annual, first found in horse paddock of the "Village Well" on Mount Lyndhurst, but later on frequently met with on pipeclay soils throughout the district.

*Pterigeron microglossus, *Bentham.*

Podolepis Siemssenii, *F. v. Mueller.*

Helipterum corymbiflorum, *Schlechtendal.*

Helipterum incanum, *DeCandolle.*

Helipterum pterochaetum, *Bentham.*

*Helichrysum lucidum, *Henckel.*

Calocephalus platycephalus, *Benth.*

Calocephalus sp., No. 481 (?). Flowers too imperfect for specific denomination. It is a low perennial, with rigid, divaricate branches, stems, and leaves, which are short, densely woolly.

Goodeniaceæ.

Scaevola humilis, *R. Brown.*

Convolvulaceæ.

*Cuscuta australis, *R. Brown.*

Boragineæ.

Heliotropium asperrimum, *R. Br.* Collected by W. Langley.

Asclepiadeæ.

Cynanchum floribundum, *R. Brown.*

Jasmineæ.

Jasminum lineare, *R. Br.*

Solanaceæ.

Solanum eremophilum, *F. v. Mueller.*

Lentibularineæ.

Utricularia dichotoma, *Labillardiere.* Collected by J. Langley at Publichouse Springs, "north of Trinity Well," growing in shallow waters.

Myoporineæ.

*Myoporum deserti, *Cunningham.* A shrub.

Myoporum* platycarpum, *R. Brown.* Sandalwood. Aboriginal name in the Dieyerie dialect, *Yumburra.*

*Eremophila Freelingii, *F. v. M.* A colour variety; flowers white. The typical shrub has a lavender corolla. Found by J. Langley near Trinity Well.

Juncaceæ.

Juncus bufonius, *Linne.*

Typhaceæ.

Typha angustifolia, *Linne.* Near Walparinna Springs.

Cyperaceæ.

On account of the difficulty of procuring well-matured specimens of these Cyper grasses, as they are largely cropped by stock, it seems to be impossible to arrive at a final and satisfactory result with some of the species, and the names given here must be considered as provisionally applied, and as liable to be improved upon.

*Cyperus castaneus, *Willd.* A dwarf annual (perhaps a variety, or, if not, a new species). New for the province of South Australia.

*Cyperus squarrosus (?), *Linne.* A form or an undescribed species.
Scirpus lacustris (?), *Linne*

Eriocauleæ.

*Eriocaulon submersum, *Tate.* Grows under water, except the tips of the leaves and the flowering stalk. First seen at Publichouse Springs by J. Langley, Trinity Well.

Gramineæ.

Panicum decompositum, *R. Brown.*
*Panicum adspersum, *Trinius.*
*Panicum sanguinale, *Linne.*
Spinifex paradoxus, *Bentham.*
*Andropogon bombycinus, *R. Br.*
Stipa aristiglumis, *F. v. M.*
*Agrostis Solandri, *F. v. M.*
*Eriachne scleranthoides, *F. v. M.*
*Diplachne Muelleri, *Bentham.*
*Diplachne fusca, *Palisot.*
*Distichlis maritima, *Rafinesque.* Near salt lakes, Publichouse Springs.

Filices.

Grammitis rutaefolia, *R. Brown.*

Characeæ.

*Nitella sp. Not sufficiently developed to admit of specific denomination. A weed growing under water in mud tanks.

Introduced Plants.

Avena fatua, *Linne.*
Anagallis arvensis, *Linne.* Flowers brick-red.
Anagallis arvensis, var. caerulea, *Schreb.* Flowers blue.

Definitions of Two New Species of South Australian Polyplacophora.

By Edwin Ashby.

[Read September 3, 1900.]

The discovery of the two new species of mollusca described in this paper is one of the many valuable results of Dr. Verco's dredging trips. Their discovery is of particular interest, because both genera are, as far as our present knowledge goes, very poorly represented in any part of the globe. Only one species of *Callochiton* has before been recorded from this colony. Henry A. Pilsbry, in his "Manual of Conchology," says of this genus and its allied genera—"Of the whole series there are very few species known. All of them are rare." And the other subgenus *Stenochiton* is only represented by two or three species, though the allied subgenus *Stenoplax*, to which the species herein described bears some affinity, is a little better represented; but no representative has yet been recorded from this colony.

Ischnochiton (Stenochiton) pallens, *sp. nov.* Pl. i., figs. 1*a*—*g*.

General Appearance.—Shell glossy, elongated, anterior portion tapering to rear. Evenly arched and rounded, side slope curved. *Colour.*—Cream, mottled with pink and pale brown.

Anterior Valve.—Smooth and glossy, except for several growth lines—that nearer the outer margin being the deeper. This valve is longitudinally much shorter than is the case in *Stenochiton juloides* and *S. Pilsbryanus.* Slits 13, at very irregular distances apart.

Posterior Valve. — Shield - shape tapering rapidly, mucro posterior, only slightly raised. A deep sulcus traverses the whole valve a short distance from the margin, preserving the shield outline of the shell. A shallow diagonal depression crosses the valve from the mucro to the suture. Surface of shell glossy and smooth, slight growth lines visible under the microscope. Slits six; the teeth are very irregular in contour.

Median Valves.—Uniformly smooth and glossy, showing numerous growth lines, which are continued right across the dorsal area. The three areas are hardly distinguishable, except that the lateral area is slightly raised. The posterior margin is finely serrated like a file where the valves are not worn. Four of the median valves have one broad wedged-shaped slit on each side; two valves have two slits on each side. Inside of shell

glossy white, sinus broad and shallow, sutural laminæ only slightly produced.

Girdle.—Under pocket lense appears whitish and felt-like. The margined fringed with white spicules, but under one-inch objective the girdle is seen to be crowded with masses of small irregular imbricating scales, which are finely striated.

Measurement.—Length, 26 mm.; breadth, 7 mm.

Habitat.—St. Vincent's Gulf; dredged by Dr. Verco.

Remarks.—This species is much broader in proportion to its length than *juloides*, the first valve being the broadest and very rounded, the width being fairly maintained to the sixth valve inclusive. Valves seven and eight taper rapidly, the latter being almost pointed. It is also easily distinguishable from *juloides* and *Pilsbryanus* by the anterior valve being longitudinally much shorter, the creamy white colour, and the densely irregularly scaled girdle. I am indebted to Dr. Verco for specimens of this and the following species.

Callochiton rufus, *sp. nov.* Pl. i., figs. 2*a*—*g*.

General Appearance.—Shell oval, width three-fifths of total length, carinated, side slopes very curved. *Colour.*—Uniformly bright terra-cotta red, both shell and girdle, with the exception of a small white spot on dorsal area of valves three to eight, and the lateral area of valve seven, which is pure white; from this valve a white line traverses the girdle; also the four first valves have a light spot on the posterior margin.

Anterior Valve.—Under pocket lense quite smooth, with the exception of a few concentric growth lines. Megalospores are very distinct under compound microscope. Slits 11, teeth crenulate, which appearance is caused by the slight projection of the props. The spongy character of the eaves is continued in the slits between the teeth.

Posterior Valve is almost equally divided into two areas, the dorsal, or central, broadly wedge-shaped, traversed by eight longitudinal strongly raised ribs, similar to those of the pleural areas of the median valves. Mucro median, although shallow, decidedly more prominent than in *C. platessa.* Posterior area smooth, decidedly raised at the junction with the dorsal area. Slight concentric growth lines are discernible.

Median Valves.—Lateral area much raised, slight growth lines; also two or three shallow vertical sulci just distinguishable. Densely pitted with megalospores, which are very distinct. Pleural area longitudinally ribbed with scimitar-shaped riblets. The pits between are very deep where they join the lateral area. Dorsal area is raised, wedge-shape, divided from the pleural area by a deep spindle-shaped pit, tapering off into a curved groove at

anterior margin. A small white spot on valves three to eight. Slightly beaked. Under one-inch objective this area is closely ribbed with wavy longitudinal riblets. Slits two each side, eaves very spongy, teeth propped.

Girdle.—Broad, under pocket lense leathery, same red colour as valves, fringed at margin. Under one-inch objective is seen to be densely clothed with evenly packed, long, linear scales or spicules. These are arranged in rows, the apices curving across to the next row.

Measurement.—Length, 16 mm.; breadth, 10 mm.

Habitat.—Dredged St. Vincent's Gulf by Dr. Verco; one specimen only.

Remarks.—In general appearance this species closely resembles the bright red form of *Chiton tricostalis*, but on closer inspection the sculpture is seen to be widely different. The ornamentation in some respects approximates to *Callochiton platessa*, but that species is much more strongly pitted or decussated, and the longitudinal scimitar-shaped sulci are absent; also it is more strongly beaked than the species now described. Only one specimen has been obtained, and only the insertion plates of the first two valves have been examined.

Definition of a New Species of South Australian Polyplacophora.

By M. M. Maughan.

[Read September 3, 1900.]

Chiton oruktus, *sp. nov.* Pl. i., figs. 3*a*—*g*.

General Appearance.—Shape oblong, oval, very elevated, carinated, side slopes steep and slightly curved. Shell sloping back from about valve five. *Colour.*—Greyish green, mottled with olive. Anterior valve slightly lighter in colour than the rest. Dorsal areas tipped with reddish tinge. Girdle same colour as valves, with dark olive stripe opposite each lateral area, and at intervals round anterior and posterior valves.

Anterior Valve.—Steep, almost smooth, but showing scarcely perceptible radial costæ, and under the lense concentric wrinkles, faintly imbricating. Slits eight.

Posterior Valve.—Small, about half width of valve three. Mucro anterior. Posterior slope nearly straight. Posterior area ornamented with faintly imbricating concentric wrinkles like the lateral areas of other valves. Immediately in front of this area are the deep wedge-shaped pits described below. Slits eight.

Median Valves.—Dorsal area beaked, merging into the pleural area, faintly wrinkled with what appear to be growth lines. The marked feature of this shell is the row of about 12 parallel, very short, deep, wedge-shaped pits in the pleural areas, beginning from the edge of the lateral areas. They make an angle of about 120° with the direction of the transverse growth lines. Lateral areas are elevated with very low, flat, longitudinal, faintly imbricating divisions. Slits 1.1. Insertion plates with pectinated sinus broad, denticulated with 12 slits. A strong triangular rib, with apex at the posterior margin of the insertion plate, is seen inside of each of valves two to seven. Colour of articulamentum greenish white.

Girdle.—Scales smooth, wide, and very obtuse at apex.

Measurement.—Length, 20 mm.; width, 10 mm.

Habitat.—McDonnell Bay; found by Dr. W. G. Torr, to whom I am indebted for specimens.

EXPLANATION OF PLATE I.

a. **Dorsal view of entire shell.**
b. **Anterior valve.**
c. **Median valve.**
d. **Posterior valve.**
e. **Anterior valve showing teeth.**
f. **Portion of girdle magnified.**
g. **Insertion plate, median valve.**

Fig.
1. **Ischnochiton (Stenochiton) pallens.**
2. **Callochiton rufus.**
3. **Chiton oruktus.**

Descriptions of New Genera and Species of Australian Mollusca (chiefly Tasmanian).*

By Professor Ralph Tate and W. L. May.

[Read October 2, 1900.]

Lampusia nodocostata, *spec. nov.*

Shell fusiform, rather slender, light-brown. Whorls (excl. proto-conch) four and a-half, convex, but obtusely angulated in the middle. Embryonic whorls incomplete, one and a-half preserved, smooth, rounded, relatively large (2·75 mm. diam.), suggestive of a styliform proto-conch similar to that of *L. exarata*, but on a larger scale.

Costæ subacute, with about three nodulations on the anterior half; six intervariceal costæ. Varices similar to the costæ, except that they are stouter; seven in all.

The spiral ornament consists of crowded threads, which are obscurely granulated; 24 on the penultimate whorl, of which three on the anterior half of the whorl are broader, and originate the nodulations on the costæ.

Last whorl about two-thirds the total length of the shell. The costæ are extended to the base, and the nodulation is continued below the periphery, corresponding with the intercrossing of six broader spiral threads, which are regularly disposed; the interstitial spaces between the broader threads are occupied by about eight smaller spiral threads.

Aperture quadrately oval; beak short, considerably upturned. The columella is smooth, and the outer lip is not dentate (the shell is probably not full grown).

Length, 31; breadth, 16; length of aperture and canal, 17 mm.

East Coast, Tasmania; two examples (*W. L. May*).

This species appears from the description and figures of *Triton tenuiliratus*, Lischke, Japan Meer-Conch, to be closely related thereto; but differs by details of ornament. *T. granulatus*, Dunker, is the only Australian species of the genus unknown to

* It is anticipated that figures of the new species and other unfigured Tasmanian species will be published early next year by the Linnean Society of New South Wales, to accompany a paper entitled "Revised Census of the Marine Mollusca of Tasmania," as time does not permit of their preparation to accompany this issue.

us, but as it is said to belong to Section Simpulum, whereas our species belongs to Gutturnium, the two must be regarded as distinct.

Cantharus kingicola, *spec. nov.*

Shell fusiformly oval, somewhat solid; *colour* opaque-white, except the summit, which is pale-orange.

Nucleus small, of two and a-half smooth, convex turns. *Spire-whorls* five, slopingly convex, subangulated towards the anterior by reason of the greater volume of the axial costæ. The *axial* ornamentation consists of close, elevated, rounded, straight costæ (twelve on the penultimate whorl), which thicken very rapidly as they approach the front suture (there they are about twice as wide as the interspaces). The *spiral* ornament consists of roundly compressed valid liræ (seven on the penultimate whorl) which cross the costæ, and of a sutural adpressed band.

Body-whorl convex, contracted anteriorly; there are twelve axial costæ, which are most developed at the rounded periphery, and become evanescent in front of it; there are about 15 spiral liræ, fairly regular, with occasional interstitial threadlets, and there is a sutural band.

Aperture elongately oval, half as long as the shell. Outer lip uniformly convex, varicosely dilated; acute, prominent lines within. Columella concavely arcuate, not plaited at the base. Beak short, rather wide, slightly upturned.

Length, 18; width, 9 mm.

King Island; two specimens.

Marginella cratericula, *spec. nov.*

Roundly obconic, somewhat bullæform, having the general features, as regards shape of a *Bullinella*, translucent, shining, bluntly rounded posteriorly (where the shell is widest), rapidly attenuating to the subacute front. Spire concealed and sunken to form a shallow crateriform depression.

Outer lip slightly thickened, smooth on the inner margin. Columella with two closely approximate large plaits; the anterior one the larger, terminating in a slight anterior emargination.

Length, 2·3; width, 1·5 mm.

D'Entrecasteaux Channel, Tasmania; 10 fathoms (*W. L. May*), two examples.

This species is conspicuous by its impressed spire, which separates it from all other Marginellidæ.

Marginella multiplicata, *spec. nov.*

Shell minute, rather solid, shining white, having much the shape of *M. Isseli*. Spire concealed. Aperture equalling the total length of the shell, but not extending much beyond the

summit; slightly arched, narrow, of nearly equal width till it slightly widens at the everted front. Outer lip thickened and well-margined all round, smooth within. Columella with one strong oblique plait at the front, which is succeeded on the pillar by seven transverse thread-like plaits; the columella-plait runs out to form the left margin of a shallow and wide effuse notch.

Length, 1·6: width, ·95 mm.

Tasmania, *W. F. Petterd !*.

This species much resembles *M. Isseli*, Nevill (*M. nympha*, Braz.), but it has more plications, and the outer lip is smooth; from *M. cymbalum*, which is a much larger shell, it is more narrowed anteriorly, and the plications of a different type. *M. Hallii* is truncated at the apex. *M. alternans* appears to resemble it, and though they have the same number of plications, yet their dispositions are so distinctly different that we must regard them, in the absence of actual comparisons, as distinct.

Marginella biplicata, *spec. nov.*

Shell small, cylindroid, pellucid, straw-coloured. Spire very obtuse, of three and a-half whorls, scarcely exserted. Aperture narrow elongate, widening to the front, obtuse-angled posteriorly. Outer lip scarcely thickened; not ascending on the spire, its junction marked by a slight retiring angle; smooth on the inner side. Columella with two strong oblique plaits at the front—the posterior one is slightly the stronger; anterior emargination well-defined.

Total length, 4; greatest width, 2 mm.

Port Esperance, Tasmania; in 24 fathoms, 2 exs. (*W. L. May*).

It is nearest to *M. stanislas*, but is shorter and relatively broader, and the apex is more obtuse, whilst the most prominent differences are in the smooth inner lip and biplicated columella.

Marginella Simsoni, *spec. nov.*

M. denticulata (pars), Tate, non Conrad.

M. minima, Petterd, non Sowerby.

Shell pyriform, contracted in front, shining, white. Spire immersed, though not wholly concealed. Aperture as long as the shell, slightly everted in the young. Outer lip thickened, smooth. Columella with about ten plications, decreasing gradually in size from the front.

Length, 1·9; greatest width, 1·3 mm.

Tasmania and South Australia.

M. minima, Petterd, the type of which we have studied has a length of 1·4 and a breadth of 1·0 mm., and besides being smaller than *M. denticulata* it is slightly more attenuated to the front, and the outer lip is not thickened; differences which may be attributed to a young age.

The description of *M. denticulata*, Tate, is inapplicable, because it was based on two species—one specimen supplied the characters "denticulated margin and four-plicate columella" with exsert spire (it is a young micromorph of *M. Strangei*); the other, "pyriform shape and immersed spire," with a smooth outer lip and multiplicate columella, is *M. Simsoni*.

Marginella Mayii, Tate *(spec. nov.)*.

Shell of an elongately oblong-oval shape; the body-whorl rather rapidly tapering from the rounded shoulder to the base; spire obtusely conical, blunt at the apex.

Test thick, smooth, polished. General colour chestnut brown, relieved on the spire by lighter colour at the posterior sutures; on the last whorl it is interrupted by a narrow light-coloured band at about the posterior one-third, and also at the base; the dark coloured bands are deeper tinted at their margins; the thickened aperture, all round, is opaque white.

Whorls five, nearly flat; the last convex posteriorly, and of an even slope thence to the snout.

Aperture three-fourths the total length of the shell, narrow, the outer lip making an acute angle posteriorly; about 2 mm. wide medially, narrowing thence to the front to about half. Outer lip thickly and broadly callously thickened on the outside, ascending to about one-half the height of the penultimate whorl; denticulated within (except towards the extremities). Columella stoutly four-plaited, plaits subequal, the posterior pair more transverse than the anterior pair.

Total length, 12; length of aperture, 9; maximum width, 6 mm.

Frederick Henry Bay (type) and East Coast of Tasmania (*W. L. May*); Derwent Estuary (*E. Harrison*).

Among Australian congeners *M. Mayii* comes near to *M. pygmæa*, but is of very much larger size; it is, moreover, more attenuated anteriorly, and especially differs by its outer lip variced outside and denticulated within; also near *M. Allporti*, which it resembles in its denticulated outer lip and coloration, but differs by longer and attenuated spire and larger size.

I have much pleasure in adopting for this shell the name of my coadjutor, under which name it has been distributed [*R. Tate*].

Marginella ovulæformis, *spec. nov.*

Shell minute, ovate, attenuated at the ends, regularly convex, white, shining. Spire concealed, the aperture extending backward beyond it.

Aperture narrow, arcuate, bluntly rounded posteriorly, slightly expanding to the front, ending there in a slight emargination, which is curved to the left. Outer lip thin,

blunt-edged, edentulous. Columella with a strong terminal spiral plait running out to form the left margin of a deep and somewhat effuse canal.

Length, 1·5; greatest width, 1 mm.

Tasmania (*W. F. Petterd!*).

This species and *M. lubrica* are characterised among recent Marginellidæ by their uniplicate columellas, but that type has an ancestral form in an Eocene species at Muddy Creek. In shape, *M. ovulæformis* is somewhat intermediate between *M. Flindersi*, with two plaits, and *M. Hallii*, with seven plaits; *M. Isseli* is also near, but it has four plaits, and is not so attenuated at the ends.

Donovania fenestrata, *spec. nov.*

Shell moderately stout, narrow lanceolar fusiform, pale-fawn colour. Pullus papillary of three, inflatedly convex smooth whorls, somewhat rapidly diminishing in size. Spire-whorls five and a-half, moderately convex, separated by a deeply impressed suture; ornamented with spiral and transverse ridges of equal strength, which produce square deep fenestrations; there are five spiral ridges, and on the penultimate whorl there are about twenty axial ones.

Last whorl convex, with seven spiral ridges to the periphery—three on the concave area below it, and four on the snout.

Aperture roundly oblong, higher than wide; outer lip entire, vertical in contour, simple, ridged inside, corresponding with the external furrows. Columella arched to its base, thence running out abruptly and obliquely to form the left boundary of a short, wide, slightly up-turned snout.

Length, 8; width, 2·75; height of aperture, 2·75 mm.

East Coast of Tasmania (*W. L. May*).

Natica Tenisoni, *nom. mutand.*

N. nana, Ten.-Woods, P.R.S., Tasm., 1876, p. 149, non Möller.

Long Bay; Ten.-Woods.

Thylacodes caperatus, *spec. nov.*

Shells agglomerate, reddish brown; whorls embracing and reciprocally adherent, forming a short broad cone, ornamented with close-set, rounded, irregularly-sized, transverse ridges; suture distinct. The free tubular portion long, much narrowed, irregularly bent, circular in section; ornamented as the rest of the shell.

Diameter of base, 4 to 5; height of cone, about 2; length of tube, up to 10; its diameter, 1 mm.

Tamar Heads, Tasmania; *W. F. Petterd!*.

Animal unknown, but from its resemblance to some Tertiary species in Australia it is associated with *Thylacodes* rather than with *Vermetus*.

Turritella Atkinsoni, *spec. nov.*

This species was described as new by Tenison-Woods in 1877, under the name of *T. Tasmanica*, which makes double employment with Reeve's species; and in the following year it is quoted by him in his "Census" as *T. Tasmaniensis* (a typographical error). It would appear that he had subsequently admitted the need of a new specific denomination, and the shell has been locally known as *T. Atkinsoni.* Though its authorship is not traceable in print, we utilise it with ready willingness.

T. Woods's description is rather misleading, as it implies a bicarinated species, whereas there are four large keels on the penultimate whorl—the peripheral one is the largest, the posterior two smaller, and the anterior one is nearly as large as the peripheral one, with or without a slight band at one or both sutures. Its closest relative is *T. austrina*, Watson, of Kerguelen Island; but the Tasmanian shell has interstitial spiral striæ, and the sinus-lines are deeper and wider.

Long Bay, *Ten.-Woods;* Port Esperance, *W. L. May.*

T. Godeffroyana, Donald, Mal. Soc., IV., p. 53, t. 5, f. 6-6*a*, 1900, which is founded on a single specimen, may be an individual variation; it has *three* strong keels.

Scalaria (Acrilla) minutula, *spec. nov.*

Shell minute, moderately thick, cylindroid-turreted. Spire-whorls five, pale yellow-brown, flatly convex, and slightly angulated in the posterior-third, separated by a linear suture, bounded anteriorly by a spiral thread; ornamented by slender slightly oblique ribs, about 15 on the penultimate whorl, which are somewhat bent at the angulation, the interspaces are as wide, and smooth. The translucent-white apex consists of a convex, relatively wide, three- to four-carinated whorl, and of a small hemispheric tip.

Last whorl flatly convex to the acute margin defining the base, base smooth.

Aperture oblong, somewhat effusively expanded at the front; peristome incomplete; outer lip thin, shortly insinuate at the suture; columella thin, nearly straight.

Length, 2; breadth, ·57 mm.

Tasmania, *W. L. Petterd !;* W. Coast of S. Australia, *R. Tate !;* Victoria, *J. H. Gatliff !*

Eulima inflata, *spec. nov.*

Whorls slightly irregularly convex; penultimate whorl somewhat contracted; last whorl much inflated, regularly convex. Aperture relatively small, roundly oval, hardly oblique. Outer lip not retreating at the sutural margin.

Length without apex, 6·25; width, 3 mm.

This species resembles *E. Tryoni*, but is thinner, and is a longer shell for the same number of whorls—the whorls are more convex; whilst *Tryoni* has a more oblique aperture, narrower base, which is oblique on the left side.

In the absence of the tip, it is uncertain to place the species in the Section Mucronalia, to some species of which it has some resemblance.

North Coast of Tasmania; *W. F. Petterd!*.

Eulima Mayii, *Tate, spec. nov.*

Shell solid, white, highly polished. Spire with a slight apical twist from before backward, gradually tapering to an extremely attenuated tip. Whorls fourteen, flat. Aperture elongate-oval, or a little higher than wide, slightly oblique; outer lip retreating from the middle line to the suture.

Length, 7·75; width, 2·5; height of aperture, 2·25 mm.

Seems to resemble *E. intermedia*, but has the last whorl approximately about half the length of the shell, instead of one-third, as in the Mediterranean species.

I employ the species-name in compliment to my coadjutor, under which it has been known in manuscript among Tasmanian collectors [*R. Tate*].

East Coast of Tasmania, south of Swansea; *W. L. May.*

Eulima Tryoni, *spec. nov.*

E. Tenisoni (pars), Tryon, Man. Conch., VIII., t. 68, f. 16, non p. 269; *E. Tenisoni*, Tate, T.R.S., S. Aust., XXII., 1898, p. 81.

This is the shell figured by Tryon as *E. Tenisoni*, but it is a different species to *E. micans*, T.-Woods, to which he applied that name. It is related to *E. latipes*, Watson, which has a broader base, patulous outer lip, and has a somewhat rapid increase of growth of the spire.

Common in S. Australia; also Victoria; and at Derwent Estuary, Tasmania, *W. L. May.*

Stylifer Petterdi, *nom. mutand.*

S. robusta, Petterd, Journ. Conch., 1884, p. 140, non Pease, 1860.

Leven Heads, Tasmania.

Syrnola Harrissoni, *spec. nov.*

Shell lanceolate, thin, hyaline, smooth, white. Apex heterostrophe, small, of one and a-half whorls. Spire whorls five, rapidly increasing in size, nearly flat, suture impressed (the specimens examined are more or less corroded, and present, in consequence thereof, a shoulder at the posterior suture).

Aperture elongate-oval, somewhat expanding anteriorly; columella with a very prominent spiral plait.

The shell is variable in its proportionate dimensions. The figured specimen has length, 3; width, 1; a large example has breadth, 1·5; length of aperture, 2; estimated length, 5·5 mm.

Off Brown's River, Tasmania, *E. Harrisson!*.

Syrnola Petterdi, *nom. mutand.*

Obeliscus Tasmanicus, Petterd., Jour. Conch., 1884, p. 40; non *S. Tasmanica*, Ten.-Woods (Styloptygma), 1877.

Tasmania.

Syrnola punctospira, *spec. nov.*

Shell minute, acuminately oval, rather thin, sub translucent. Spire whorls three and a-half, convex, of rather rapid increase, sculptured by forward-curved striæ and distant indistinct lineations; suture impressed. Pullus of one and a-half hyaline, exsert whorls continued into an erect loop with an immersed tip; its last whorl graduating in size to the first spire-whorl, somewhat inflatedly rounded and sculptured by ten spiral rows of punctures. Aperture elliptic-oval, front lip slightly effusively dilated on the left; columella with a large twisted plait.

Length, 2·25; greatest width, 1·0 mm.

George Bay, Tasmania, *W. F. Petterd!*.

A minute shell, with well-rounded and rather rapidly-increasing whorls, with a distinctive sculptured pullus. Several examples.

Odontostomia deplexa, *spec. nov.*

Shell minute, imperforate, moderately stout, smooth, shining, white, sculptured with microscopic growth-lines (without spiral striæ). Whorls five, of moderate increase, convex, slightly protuberant at the posterior suture. Pullus concealed, except the papillary-like tip of the loop.

Aperture oval, columella with a strong transverse fold at its origin.

Length, 3; width, 1·1 mm.

Most like *O. lævis*, but the whorls are more convex, shell more cylindroid, besides being much smaller.

Frederick Henry Bay, Tasmania (*W. L. May*); S. Australia (*R. Tate*); Victoria (*J. H. Gatliff!*).

Odontostomia varians, *spec nov.*

Shell small, acuminately oval, moderately stout, dull white (dead). Pullus pellucid, smooth, papillary as a whole, forming a small lop-sided bend. Whorls five, flatly convex, separated by a broad deep suture; sculptured by four deep narrow spiral grooves, separating flat interspaces of dissimilar width (the first

three are relatively wide, the second and third of about the same width, but wider than one; the fourth is a slender lineation sunk in the sutural canal). The first and second ligatures are broken-up into blunt, straight, axial ridges, separated by about as wide indented interspaces.

Aperture oval, peristome thin. Columella slightly arched, forming a blunt roundly-effuse angle at the front; thinly and sparingly exsert to form an umbilical chink; there is a slender transverse plait at its summit.

Length, 3; width, 1·4 mm.

Of six examples two are in accord with the foregoing description. A third and fourth, which are translucent horn-colored, have the first and second ligatures studded with small granules; whilst the fifth and sixth, also translucent, are without ornament, and the spiral furrows are feebly developed and barely traceable on the body-whorl.

D'Entrecasteaux Channel, Tasmania (*W. L. May*).

Genus Pseudorissoina, *Tate* and *May*.

Type :—*P. Tasmanica*, Tenison-Woods (*Stylifer*).

Apex sinistral, spire and aperture like Rissoina (*e.g.*, *R. nivea*).

The unique species was originally described as belonging to *Stylifer;* Tryon, who figures an authentic specimen, says of it— "Is it not rather an *Eulima?*" Our study of the species confirms Ten.-Woods' statement that the apex is sinistral—indeed, whilst having the spire and aperture of a *Rissoina*, like *R. nivea* (the shell is, however, smooth), it has the heterostrophe loop-like nucleus of *Eulimella*. Such a combination of characters seem to be unprovided for in the families Pyramidellidæ or Rissoidæ, hence the new generic designation. Briefly, this new genus is a Pyramillid with a Rissoina aperture or a Rissoinid with a Pyramilloid nucleus. The higher value of the nuclear character in classification induces us to place it, in Pyramidellidæ, near *Eulimella*.

Turbonilla admiranda, *nom. mutand.*

Elusa bifasciata, Ten.-Woods, P.R.S. Tasm., 1877, p. 150; non *Turbonilla bifasciata*, A. Adams, 1861.

T. festiva, Angas, P.Z.S., 1877, t. 5, f. 4; non Folin, 1867.

Victoria, Tasmania, and N.S. Wales.

Rissoia (Apicularia) demessa, *spec. nov.*

Shell minute, strong, pale-brown. Spire-whorls four, convex, ornamented with narrow rounded oblique ribs (about fourteen on the penultimate), more prominent medially, and attenuated at the sutures; also with spiral grooves, which are about as wide as the intervening flat threads (about eight on the penultimate); on

the last whorl the slender costæ stop short at the periphery. Pullus of smooth whorls.

This species is closely related to *R. trajectus*, Watson, but differs by more elongate shape, arched ribs, and rounded whorls; also to *R. Strangei*, Braz., which has closer and stronger ribs, fewer spiral striæ, and the shell short and stout.

Tasmania.

Rissoia (Apicularia) apicilirata, *spec. nov.*

Elongate-conic, thin, yellow-fawn, smooth, shining. Pullus hyaline, turbinate, two-whorled, ornamented with three, spiral, simple, relatively broad and high keels. Whorls three, slightly bicarinated, the posterior slope somewhat concave, the anterior slope steeper and shorter; ornamented by transverse slender ridges (about twenty on the penultimate), which are oblique on the posterior slope, vertical thence to the front suture; there is a spiral thread at the posterior suture, and a threadlet near the anterior rows; two spiral rows of small nodosities occupy the near middle-third of the whorl.

Periphery of last whorl with four riblets crossed by costulæ, and there are a few others on the base which gradually decrease in size.

Aperture oval; peristome entire, thin.

Length, 2·2; width, 9 mm.

D'Entrecasteaux Channel, Tasmania.

This species is unique in the section by reason of its ornate pullus.

Rissoia (Pusillina) discrepans, *spec. nov.*

Shell oval-conic, thin, greyish, pale rose-tinted at the apex.

Pullus somewhat hemispheric of two smooth whorls. Spire-whorls four, nearly flat, suture impressed; ornamented by numerous slender subacute axial ridges, interstices smooth. Last whorl subangulated, the axial costation evanescent towards the anterior part; an indistinct lineation is at the periphery, as also one above and one below, all in near contiguity; base finely striated radially.

Aperture oval, outer and inner lips thinly callously joined; outer lip thin (slightly varicosely dilated behind, front lip with a slight insinuosity—these features are probably the result of an injury during life). Columella slightly exsert, margining a linear umbilical chink.

Length, 3; width, 1·6 mm.

D'Entrecasteaux Channel, Tasmania.

The ornament and shape, in combination with the angulated base, distinguish this species from all figured species.

Rissoia (Amphithalamus) Simsoni, *spec. nov.*

Pupiform, strong, shining, white, tinted with pale-chestnut. Whorls four, flatly convex, sculptured with microscopic oblique striæ; suture linear. Apex hemisphæric of one and a-half whorls. Last whorl somewhat flattened on the ventral face. Aperture oval; peristome continuous, adnate to the parietal wall. Resembles *R. dissimilis* on a large scale.

Length, 4·5; width, 1·5 mm.

Species-name in compliment to our friend and co-worker, Mr. Auguste Simson of Launceston.

Derwent Estuary, Tasmania *(W. L. May)*; also Port Fairy, Victoria *(Rev. T. Whan!)*.

Rissoia (Cingula) rubicunda, *spec. nov.*

Shell minute, elevated conic, imperforate, moderately thick; varies in colour from pellucid-brown to opaque-white.

Pullus obtuse, of one and a-half turns. Spire-whorls four, moderately convex, widest near the anterior suture (some examples show a tendency to imbrication), smooth, and sculptured with growth-lines. Suture linear, distinct. Last whorl rather depressed at the suture, rounded at the periphery, a little contracted at the outer lip.

Aperture rotund, chestnut-coloured in the interior; peristome entire; outer lip thin; columella lip slightly exsert, margining a false umbilical chink.

Length, 2·5; width, 1·0 mm.

Derwent Estuary, Tasmania *(W. L. May)*; many examples.

This may prove to belong to *Hydrobia*, when the animal has been studied.

R. perexigua, *nom mutand.*

Rissoia minutissima, Ten.-Woods, P.R.S. Tasm., 1878, p. 122 non *Rissoia minutissima*, Michelin, "Gen. Rissoia."

Rissoia (Nodulus) pellucida, *spec. nov.*

Shell minute, obliquely oval, somewhat stout, translucent-white, smooth, shining, imperforate. Pullus small, obtuse. Spire-whorls three and a-half, rapidly increasing, slantingly convex, without visible ornament or sculpture. Aperture roundly oval; peristome thick, continuous.

Length, 1·2; width, ·75 mm.

Frederick Henry Bay, Tasmania (*W. L. May*).

This species differs from other members of the section by its Littorina-like shape; however, the following species in Section Cingulina offer some comparisons:—It has the outline of *R. hyalina*, which possesses spiral raised striæ and delicate growth-lines, and it is more obliquely oval than *R. littorinæformis*.

Rissopsis buliminoides, *spec. nov.*

Shell small, cylindroid, thin, opaque-white. Whorls six, flatly convex, sculptured with faint axial striæ of growth; suture linear, but well-defined. Pullus hyaline, depressedly rounded, forming a small abrupt papillary summit, tip immersed. Aperture oval; peristome entire, the callous growth on the parietal wall somewhat explanulate; columella with a slight torsion over a minute umbilical chink.

Length, 4·25; breadth, 1·3 mm.

Federick Henry Bay, Tasmania, 10 fathoms, *W. L. May.*

Rissopsis consobrina, *spec. nov.*

Elongate, turreted, hyaline (in a fresh state), with rounded whorls and a deep suture, sculptured with curved growth-lines. Aperture elongate-oval, somewhat explanulate, columella-lip very thin and exsert.

Its turreted form, rounded whorls, and elongate-oval aperture distinguish it from *R. buliminoides.*

Length, 3·5; width, 1·0 mm.

Federick Henry Bay, Tasmania, common, *W. L. May.*

Cyclostrema porcellana, *spec. nov.*

Shell oval-conic, moderately stout, smooth, shining, opaque-white. Spire-whorls three and a-half, convex, sloping gently from the posterior one-third, more abruptly to the anterior suture, faintly marked by oblique striæ. Pullus of one and a-half whorls, translucent, depressedly convex. Periphery of last whorl roundly angulated. Aperture roundedly-oval, oblique; peristome incomplete; outer lip rather thin; columella slightly exsert, but not reflected over a minute umbilicus. Six examples.

Length, 1·8; breadth, 1·3 mm.

This species is more conic than such related forms of Tubiola as *C. australe, C. contabulatum,* and *C. micron.*

Frederick Henry Bay, Tasmania *(W. L. May).*

Zidora Lodderæ, *nom. mutand.*

Z. Tasmanica, Hedley, P.L.S., N.S. Wales, 1900, p. 93, three woodcuts; non Beddome, 1883.

This species is closely related to the Japanese *Z. reticulata;* and judging from Reeve's figure of that shell, the Tasmanian congener differs by relatively greater width.

The shell which Tate rightly attributed to Beddome's species, and described under the name of *Z. Legrandi,* T.R.S., S. Aust., XVIII., p. 118, 1894, differs from other known species by its apex situated far within the vertical plane of the posterior margin.

Tasmania *(Miss Lodder);* N.S. Wales (apud *Hedley).*

Nacella Tasmanica, *nom. mutand.*

N. parva, var. *Tasmanica*, Pilsbry, "Nautilus," 1895.
Frederick Henry Bay, Tasmania *(W. L. May).*

Cadulus (Gadilia) spretus, *spec. nov.*

Shell small, of medium proportion, well-curved, variegated (in some specimens) with translucent and opaque-white rings and encircling bands. Surface smooth, with fine obliquely annular grooves or lines, without traces of vertical striæ.

Apertures circular, transverse. Tube suddenly contracted quite near the oral aperture, but exhibits a slight dilatation at the end.

Shell most like *C. panamensis*, Sharp and Pilsbry, but seems to grow more rapidly, has greater breadth throughout, and is more curved.

Length of shell, 5·5; diameter of larger aperture, ·7; of the smaller aperture, ·3 mm.

Port Esperance, Tasmania, in 24 fathoms *(W. L. May).*

Cyamium mactroides, *spec. nov.*

Shell mactra-like, minute, equivalve, nearly equilateral, somewhat thick, smooth, and shining; of a whitish colour, and partially brown-tinted, moderately convex. Surface concentrically striated, obsoletely radially ridged, ventral and anterior margins crenulated within. Umbos small, approximate, slightly directed forwards, a little posterior. Dorsal line about equally inclined, the anterior margin curved, the posterior margin truncatedly rounded, ventral margin nearly straight.

Hinge-line arched and relatively deep. Left valve with a posterior marginal ligamental pit, in front of which is a central cardinal tooth with two strong equal divaricating branches, and an anterior oblique cardinal tooth. Right valve with two diverging cardinal teeth, the anterior one bifid at the tip.

Antero-posterior diameter, 2·05; umbo-ventral diameter, 1·8 mm.

Two pairs of valves, taken in life *(W. F. Petterd!).*

The reference of this little shell to *Cyamium* is because its dentition agrees with the emended description of the genus as implied by Bernard in Bull. Mus. Hist. Nat., 1897, p. 311.

Carditella delta, *spec. nov.*

Shell equilateral, subequivalve, trigonal, compressed with produced straight pointed umbones. The dorsal lines slope very rapidly from the umbones which are in contact; the post-dorsal margin slightly arched, the anterior-dorsal straight; the lunule and escutcheon occupy deep elliptical depressions, angulated on the margin. The ventral margin is arched, and is distantly crenulated within.

There is a thin brown epidermis; the ornament consists of concentric lines and a few distant growth-folds and obscure radial lines.

Umbo-ventral diam., 2·25; antero-posterior diam., 2; sectional diam., 1·25 mm.

Derwent Estuary, Tasmania (*W. L. May*).

Comes nearest to *C. polita*, Tate, an Eocene species, but is not produced anteriorly. It differs from *C. Atkinsoni* by its acutely trigonal outline, and is not so convex.

Carditella pectinata, *spec. nov.*

Triangularly oval, inequilateral, rather convex. Antero-dorsal margin straight and steeply inclined; post-dorsal margin convexly sloping to the narrow rounded posterior side; ventral margin slightly curved, distantly crenulated within.

Umbones obtuse, prominent, approximate, situated considerably in front of the centre.

Colour yellowish-brown. The ornament consists of numerous (fifteen or more) radial broad ridges (most conspicuous anteriorly), separated by linear sulci; and intersected by growth-lines.

Umbo-ventral diam., 1·5; antero-posterior diam., 1·5; sectional diam., 1 mm.

Derwent Estuary, Tasmania (*W. L. May*).

Genus Thraciopsis, *nom. mutand.*

Alicia, Angas, 1867, non Johnson, 1861.

Type :—*T. angustata*, Angas (sp.)

New South Wales, Tasmania, and South Australia.

On the Occurrence of Marine Fossiliferous Rocks at Kerguelen Island.

By Professor Ralph Tate.

[Read September 3, 1900.]

Plates II.—III.

Introduction.

Kerguelen Island was discovered in 1772 by the commander of a French vessel—Ives Julian de Kerguelen Tremaric. A little later it was visited by Captain Cook. Since then it has been visited by four scientific expeditions, the first under the command of Sir James Ross in 1840; the second, that of the Challenger Expedition in 1874, and the two Transit of Venus Expeditions, 1874-75, one British, the other United States of America.

The island is in about 49° South latitude, is 100 miles long, and about 50 miles wide, and is about 3,500 miles S.E. from the Cape of Good Hope, and 3,000 miles from the extreme west coast of Australia.

Ross says of it, that it is one of the most barren spots on the earth at the same distance from the pole. One of the names by which it has been known to geographers is very appropriate—Desolation Island, which was given to it by Captain Cook. Sir Joseph Hooker describes it:—"The island presented a black and rugged mass of sterile mountains, rising by parallel steppes one above another in alternate slopes and precipices, terminating in frightful naked and frowning cliffs, which dip perpendicularly into the sea. The snow lying upon these slopes between the black cliffs gives a most singularly striped and banded appearance to the whole country, each band indicating a flow of volcanic matter, for the island is covered with craters, whose vents have given issue to stream upon stream of molten rock. These were worn all along the coast into abrupt escarpments, rendering a landing impracticable, except at the heads of the sinuous bays."

Kerguelen Island was visited in 1898 by Mr. Robert Hall, of Melbourne, and his collections of lichens, algæ, fungi, and rocks, which have been described by experts in the "Victorian Naturalist, vols. XV. and XVI.," have supplemented previous knowledge in the several departments. But these discoveries are vastly transcended by that relating to the presence of marine

fossiliferous strata; almost unique as regards high Southern lands.

My reading-acquaintance with the geology of the land-masses in high southern latitudes may be for the most part summarised in the following words of Captain Hutton, F.R.S., "On the Origin of the Fauna and Flora of New Zealand," Presidential Address, Phil. Inst., Canterbury, 1884:—"From what is known of the geology of the Antarctic Islands, it appears that all are volcanic, except South Georgia, which is part of an old slate-mountain range." Nevertheless, Captain Hutton has overlooked the observations of Dr. Kidder, which indicate the occurrence of stratified deposits in Kerguelen Island; who remarks in his "Contributions to the Natural History of Kerguelen Island made in 1874-75," Bull, U.S. Nat. Mus., 1876: —"The main rocks are basalt and dolerite. The streams had cut their way deeply in places, exposing extensive surfaces of rock, but diligent search failed to disclose any stratified or fossiliferous beds" in the southern part of Kerguelen Island. "At the northern end of the island, however, in the neighbourhood of Christmas Harbor, stratified rocks are abundant, with extensive deposits of coal of poor quality, and contain many trunks of petrified trees," p. 34.

Position, Nature, and Fossil-contents of the Marine Deposit.

From Mr. Hall's field-notes and sketches the position of the fossil development occupies a depression on the west side of the peak known as Cat's Ears; it is squeezed in between eruptive masses at a steep slope, and attains to an elevation of 826 feet. The stratum seems as if it had been upthrusted from its horizontal position by the eruption of the volcanic mass which is crowned by Cat's Ears.

The rock is a fine-grained friable sandstone of a grey colour, somewhat dappled with rust-coloured grains. About 50 lbs. weight of the rock was submitted to it; it is richly prolific in fossils, constituting for the most part a lumachelle. However, the number of species is only fourteen, the Chiones and Turritella being the only ones occurring abundantly. They consist of Natica one sp., Turritella one, Chione three, Gari one, Mytilus two, Polyzoa two (impressions on the casts of *Chione*), Balanus one, Spirorbis one (2.25 mm. diam., whorls $2\frac{1}{2}$), Serpula two (one fasciculated, tubes 2.5 mm. diam, the other solitary, long, and vermiculate).

The facies of the fauna is Tertiary, and may belong to any part of it, because, as regards the well-defined species of mollusca, not one is referable to living creation—certainly not in reference to

the existing fauna of Kerguelen Island and other similar Southern positions. The *Turritella* resembles *T. Hookeri* from the Antarctic, without locality; the *Natica* has no near analogue, and the genera *Chione* and *Gari* are not represented in high Southern latitudes; nevertheless, it is not improbable that the two species of *Mytilus* may belong to recent species.

The fauna indicates nothing specialised, except that of distinctness of species, to separate it from that of a modern deposit; and in the absence of distinctive genera of Palæogene age, I must refer the deposit to Neogene without any subordinate assignment.

Notes on the Fossils.

Natica Tremarici, *spec. nov.* Pl. ii., figs. 4*a*-4*c*.

Shell depressedly hemispheric; whorls four and a half, marked with growth-lines, but without spiral sculpture. Aperture lunate. Umbilicus wide; a small callus is reflected over the upper portion of the umbilicus.

In shape this fossil species is like the recent *N. ampla* and *N. Incei* of the same size, but the spire is obtuse and less elevated than in *N. Incei*, more elevated than in *N. ampla*, and regularly convex below the suture; the umbilicus is somewhat similar to that of *N. ampla*.

Diameters, 19 and 12; height, 10 mm.

Turritella Hallii, *spec. nov.* Pl. ii., figs. 3*a*-3*b*.

Shell broadly conical, a little rounded at the basal angle and on the base. Apex not known. Whorls ten, biangulated, much constricted below, and more gradually contracted above.

The ornament consists of two strong keels, one at each margin of the side, dividing each whorl into three approximately equal widths; the space between the keels is flattish or slightly concave. In addition there are fine spiral threads, usually alternaternately large and small, six on the intercarinal space, and six on each of the sutural slopes.

Aperture quadrately oval, higher than it is broad; outer lip not preserved, though there are traces on the anterior part of the last whorl of curved growth lines, indicating a broad shallow sinus; columella somewhat arched and thickened (not dilated at the front).

Length, 39; breadth, 12·5; height of last whorl, 12 mm.

Among the few bicarinate species of the genus it makes some approach to *T. ambulacrum*, Sow., Tertiary in Patagonia and Chatham Islands, which has the whorls not so quadrate, and the encircling ribs are of unequal size. It simulates *T. Hookeri*, Reeve, an Antarctic species, but, judging by the figure, it is

narrower, with more numerous whorls. No details of ornament accompany the diagnosis. *T. austrina*, Watson, from Kerguelen, is somewhat broader, the whorls more numerous, not so quadrate, and the two carinating liræ not equally disposed.

Chione permagna, *spec. nov.* Pl. ii., fig. 1.

Shell triangularly oval, very thick, somewhat heart-shaped, very inequilateral, depressedly convex. Umbones large, depressed, situated in about the anterior one-fourth.

Post-dorsal margin arched, gradually merging into the obliquely subtruncated posterior margin; post-ventral margin nearly straight, rapidly incurving to the rounded anterior margin; antero-dorsal margin cordately curved; inner margin of valve quite entire. Lunule broadly elliptic, shallow, its margins angulated.

Ornamentation of crowded depressed growth-ridges and lines, not raised into lamellæ; and on the dorsal-half by rounded radial threads with equidistant interstitial furrows, about thirty in a width of ten millimetres.

Antero-posterior diameter, 86; umbo-ventral diam., 79; sectional diam., 40. A larger and more orbicular example has ant.-post. diam., 95; umbo-ventral diam., 88.

This large ponderous shell is probably the largest in the genus, hence its specific name; it is distinguishable by its obliquely orbicular outline.

Chione Hallii, *spec. nov.* Plate ii., fig. 5.

Shell oblong-oval, moderately convex, somewhat thick, inequilateral; concentrically grooved, the depressed rounded intervening folds about two times as wide as the grooves, which are somewhat variable in width, from 16 to 20 in a width of ten millimetres near the ventral margin. Internal margin of valves quite entire.

Antero-posterior diameter, 47; umbo-ventral diam., 38; sectional diam., 21 mm.

Most like *C. tristis*, Lamk., but the anterior side is more developed, more cordate, the post-dorsal margin more arched, and the concentric folds narrower and more numerous.

Chione Kergueleni, *spec. nov.* Pl. ii., fig. 2.

Oval-cordate, subventricose. Post-dorsal margin regularly convex; ventral margin slightly curved, rising rapidly to the anterior margin; interior margin quite entire.

Ornamented with depressed concentric ridges, separated by narrow deep sulci; about eight ridges in a width of ten millimetres at the front (but the various examples show considerable variation in the number of the growth-ridges); faintly radiately and densely striated at least on the sub-surface shell-layer.

Antero-posterior diameter, 57; umbo-ventral diam., 48; sectional diam., 32 mm.

This species differs from *C. Hallii* by its regularly convex dorsal margin and its wide concentric ridges.

Gari ? *sp.*

The collection contains a single example of a member of the family Psammobiidæ, as inferred fram its shape and the presence of a ligamental plate, but as the antero-dorsal area is wanting the generic location cannot be fixed. Left valve very flattened, the ventral margin nearly straight, somewhat pointed posteriorly.

Antero-posterior diameter, 50; dorso-ventral diam., 25 mm.

It does not agree with any described recent species of the family, though it approaches to *Solenotellina siliqua*, Reeve, inhabiting New Zealand.

Mytilus, *sp.* (aff. *M. planulatus*).

Shell elongately oval, solid, somewhat angularly attenuated towards the umbo, which is bent downwards, transversely moderately convex. (Smooth with low concentric growth-folds.) Anterior margin straight, dorsal margin uninterruptly arched, ventral margin.

Length (incomplete), 95 mm.; greatest width medially, 65 mm. (One imperfect valve, much decorticated).

This fossil is distinct from *M. planulatus*, Lamarck, and *M. latus*, Chemnitz, by its uniformly curved dorsal margin; being unable to make a comparative study with *M. chorus*, I avoid applying a distinctive denomination.

Mytilus, *sp.* (aff. *M. Magellanicus*).

A mould of a radially sculptured mussel is suggestive of *M. Magellanicus*, but the fine regular radiating ridges indicate some other reference.

EXPLANATIONS TO PLATES.

Plate II.

Fig.

1. *Chione permagna.* Nat. size.
2. *Chione Kerguelini.* Nat. size.
3. *Turritella Hallii.* *a*, Nat. size; *b*, sectional portion of a whorl, enlarged.
4. *Natica Tremarici.* Sectional three views, slightly enlarged—*a*, from above; *b*, frontal side; *c*, base.
5. *Chione Hallii.* Nat. size.

Plate III.

Cat's Ears, looking south-east from Long Island, near entrance to Royal Sound. (A sketch by Mr. R. Hall, 4-1-98).

1. Cat's Ears.
2. Fossil bed.
3. Heavy masses of rock.
4. Lava much contracted and distorted.

Section of a Well-bore at Mulgundawa, near Wellington, South Australia.

By Professor Ralph Tate.

[Read September 3, 1900.]

In the latter part of 1899 Dr. Stirling, on behalf of Mr. Knight, of Mulgundawa, handed me some siftings of certain fossil-developments obtained from a well-boring (the further sinking of which had to be abandoned), with the view to an opinion as to the probability of reaching water at no inconsiderable depth, if a second venture should be decided on.

Well No. 1 was sunk to a depth of 214 feet. At 213 feet a shell-bed, rich in fossils, was penetrated. The fosssils are mainly identical with those of the chief fossil-bed in the Kent Town bore, and with those from 380 to 424 feet (=312 to 356 above sea-level) at the Ki-Ki bore, in the Ninety-Mile Desert.

The Mulgundawa bore is about ten miles west from Wellington, near the lake-mouth of the Murray River, and one and a half miles from the shore of Lake Alexandrina. Its elevation above sea-level has not been ascertained, but it is not likely to exceed 20 or 30 feet. It is situated about 40 miles N.W. from Ki-Ki, which yielded water at 312 feet below sea-level.* There is great similarity in the beds yielding water in the Ninety-Mile Desert, which agree with those at Mulgundawa—a contemporaneity which is proved by identity of fossil-contents. This led me to express the opinion that water would be found at a depth below 214 feet; and making allowance that the Eocene beds were rising in their westerly extension, I assigned a less depth to reach water than obtained at Ki-Ki.

Bore No. 2 was sunk close to the site of No. 1, and in a letter, dated July 14, 1900, Mr. John S. Knight advises that "At a depth of 292 feet we struck water, which rose to, and is still flowing, from the casing within 3 feet 6 inches of the surface; consider it middling stock water." Thus has been demonstrated the feasibility of an economic application of a detailed knowledge of the actual similitudes of fossiliferous horizons. An increase of like results may lead to the determination of the actual source of water supply contained in the basal beds of the Eocene in the vast area of country extending eastward from the

* See Clark, Trans. Roy Soc., S. Aust, XX., 1896, p. 112.

River Murray into the mallee lands of N.W. Victoria. The quality of the water has not altogether been unsuspected, and it is clear from the position of Mulgundawa that the water is impounded, and in consequence has acquired an accession of mineral ingredients; but it is not improbable that, in course of time, some sensible diminution in the percentage value of its salts will result.

BORE-SECTION AT MULGUNDAWA.

FEET.

30-40. Fine yellow sand, with fragments of oyster; pectens and spines of *Cidaris*.

43. Greyish-yellow fine-grained calciferous sand, with calciferous sandstone pellets. *Isis* sp. and Polyzoa.

60-69. Similar to 43. *Terebratulina catinuliformis*, *Isis* sp., *Scutellina patella*, *Fibularia gregata*, Polyzoa.

75. Same as 43. Shell fragments very rare.

84-93. Same as 60-69. Fossil-debris rare. *Scutellina patella* and other Echinoderms, Graphularia, *Dimya dissimilis*.

97-98. Grey, extremely calciferous sand, and slightly argillaceous. No fossils.

100-107. Same as 60-69. *Terebratulina catinuliformis*.

160-164. Greenish-grey, very fine-grained, calciferous sand. *Terebratulina catinuliformis*.

175. Yellowish-grey, calciferous, sandrock.

180-186. Bluish-grey, clayey sand, very fine, and slightly calcareous. No fossils.

188-200. Grey calciferous sand and sandrock. No fossils.

202-206. Mottled grey-brown sandy clay. Chief source of the fossils.

207-208. Very stiff brown-black clay.

209. Brown clayey sand.

216-226. (From seven levels.) Very stiff brown-black clay.

230-232. Brown clayey sand.

238. Light brown clayey sand.

246-250. Stiff black clay.

254-260. Black and grey clays.

264. Brown clayey sand.

265. Brown sharp sand, with much comminuted shell-debris; the fossils corroded and eroded; small splinters of carbonised wood, freely diffused.

285. Grey calciferous sand, with shell-debris.

292. Greyish-white sand, very fine-grained; the coarser residue of translucent sub-angular quartz grains up to 5 mm. diameter; fossiliferous, and splinters of carbonised wood.

Eocene Fossils from Mulgundawa-bore.*

Lamna, sp.
Otodus, sp.
Otolithes
Fusus, n.sp., aff. sculptilis
Lampusia oligostira
Marginella sub-Wentworthi
Uromitra, n.sp., aff. subcrenularis
Asthenotoma, n.sp.
Natica Aldingæ
Natica polita
Turritella Aldingæ
Mesalia stylacris
Newtoniella, n.sp.
Solariella, n.sp.
Minolia, n.sp.
Calliostoma, sp.
Bullinella, n.sp., aff. aratula
Scaphander tenuis (?)
Dentalium Mantelli
Dentalium subfissura
Anomia (?) sp.
Dimya dissimilis
Pecten Foulcheri (?)
Amussium Zittelli
Crenella globularis
Septifer, n.sp., aff. fenestratus
Nucula Tenisoni
Leda apiculata
Leda Huttoni
Leda leptorhyncha
Axinæa Cainozoica
Limopsis insolita, var.
Limopsis, n.sp.
Barbatia celloporacea
Barbatia limatella
Barbatia, sp.
Trigonia semi-undulata
Crassatella communis, var.
Cardita, n.sp.
Carditella, n.sp., aff. polita
Verticordia, n.sp., aff. rhomboidea
Lucina despectans
Chione Cainozoica
Meretrix tenuis
Dosinia imparistriata
Tellina porrecta
Tellina, n.sp.
Mactra, n.sp., aff. Hamiltonensis
Myadora lamellata
Myadora, n.sp., aff. prælonga
Corbula pyxidata
Terebratulina catinuliformis
Magasella lunata
Selenaria
Lunulites and many other Polyzoa
Ditrupa
Serpula
Cidaris, sp. (spines)
Echinus Woodsii (?)
Monostychia australis (?)
Scutellina patella
Fibularia gregata
Astrogonium sp.
Pentacrinus
Comatula sp.
Graphularia senescens (?)
Isis, sp.
Flabellum pistinctum
Flabellum dedicellare
Placotrochus deltoideus
Notocyathus viola
Notocyathus excisus
Notocyathus punctatus
Notocyathus, n.sp.
Deltocyathus italicus
Deltocyathus, sp.

---

* The fragmentary condition of the fossils does not permit in many instances of a satisfactory specific assignment. The corals were determined by Mr. J. Dennant.

Description of a New Species of Acanthiza (*A. tenuirostris*).

By A. Zietz, F.L.S., C.M.Z.S., Assistant-Director of the S.A. Museum.

[Read November 6, 1900.]

This new species is nearest allied to *Acanthiza reguloides*. Its more diminutive size, its feeble bill, the different shade of the rump feathers, and the absence of the bright rufous colouring of the basal third of the tail feathers, distinguish it from *Acanthiza reguloides*, which, according to Gould, is a fairly common species about Adelaide.

Two specimens have been collected by R. M. Hawker, Esq., at Leigh Creek, in August, 1895.

I propose for this new species the name *Acanthiza tenuirostris* (the small-billed Tit).

With the general characters of *A.* (*Geobasileus*) *reguloides*. Upper surface of a more greyish tinge instead of olive brown. The feathers on the forehead are much darker and broadly margined with white. Upper tail coverts of a yellowish white tinge; in *A. reguloides* they are ochreous. Under surface whitish and slightly tinged with yellow. Throat and chest still paler, each feather with a very slight broken margin of brown. Base of tail only with a faint, just perceptible, rufous tinge. The external margin of the centre tail feathers, and the tips of all greyish. Upper tail coverts whitish, slightly shaded with fawn.

For comparison I give the measurements of *A. reguloides* from the hills east of Adelaide, together with those of the new bird.

	A. tenuirostris.	*A. reguloides.*
Total length ...	3·5 inches ...	4 inches
Length of wing ...	1·9 " ...	2 "
Length of culmen...	·3 " ...	·4 "
Height of bill ...	·1 " ...	·12 "

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

XXVII.

[Read October 2, 1900.]

LAMELLICORNES.

HETERONYX.

H. grandis, sp. nov. Robustus, elongato-ovatus; postice manifeste dilatatus; minus nitidus; piceo-ferrugineus, antennis pedibusque paullo dilutioribus; pilis cinereis subtilibus sat elongatis sat crebre vestitus; capite (clypeo incluso) sat grosse ruguloso; prothorace aspere subtiliter confertim, elytris sat crebre minus subtiliter, pygidio fere ut elytra sed magis leviter, punctulatis; clypeo antice late leviter rotundato, sutura clypeali bene determinata, angulata; pronoto quam longiori ut 5 ad 3 latiori, lateribus leviter arcuatis, basi modice bisinuata, angulis anticis acutis sat productis posticis obtusis; elytris obsoletissime interrupte substriatis; tibiis anticis extus obtuse tridentatis; labro longe sub clypeum sito; antennis 9-articulatis; coxis posticis ad latera quam metasternum parum brevioribus, quam segmentum ventrale 2um multo longioribus; tarsis posticis minus elongatis, articulo 2° quam 1us manifeste longiori; unguiculis appendiculatis, parte apicali quam basalis parum breviori. Long., 8 l.; lat., 4 l.

This remarkably fine *Heteronyx* is near *piceus*, Blanch. In my tabulation of the species of that group (P.L.S., N.S.W., 1892, pp. 488-9) it must be placed next after *alpicola*, Blackb., as follows:—

HHHH. Sculpture of pronotum very much finer and closer than of head and elytra ... ... *grandis*, Blackb.

The elytra of this species are not truly striate, but their surface is slightly (scarcely visibly) uneven owing to the presence of faint longitudinal wide elevations, the margins of which, from a certain point of view, give the elytra a scarcely noticeable quasi-striate appearance.

Victoria; Dividing Range (unique in my collection).

ELATERIDÆ.

CHROSIS.

C. angusticollis, sp. nov. (Mas). Angusta; valde elongata; ferruginea, prothorace coccineo (in medio nigricanti), capite antennisque nigris, pedibus piceis; capite sparsim fortiter punctulato, pilis albidis sat elongatis sparsim vestito; prothorace quam ad basin latiori vix (quam ad medium latiori ut 10 ad 7) longiori, supra longitudinaliter profunde trisulcato, ut caput pubescenti, sparsim subtiliter (ad latera magis crebre magis grosse) punctulato, antice fere truncato, lateribus sat parallelis, angulis posticis fortiter divaricatis; elytris breviter (apicem versus magis longe) pubescentibus, ad apicem oblique subtruncatis, sat fortiter striatis, interstitiis leviter convexis punctulatis. Long., 8 l.; lat., 2 l. (vix).

Allied to *C. trisulcatus*, Er., but extremely distinct by, *inter alia multa*, the very much sparser puncturation of its head and prothorax and the narrower and more parallel form, and the more abruptly divaricate hind angles of the latter. The antennæ considerably passing the base of the prothorax indicate the specimen before me to be a male.

Victoria (Dividing Range).

PARASAPHES.

P. quinquesulcatus, sp. nov. Angustus; valde elongatus; ferrugineus, capite antennis et prothoracis vittis 2 nigricantibus, femoribus infuscatis; capite crebre subfortiter punctulato, pilis albidis sat elongatis vestito; prothorace quam ad basin latiori ut 10 ad 8 (quam ad medium latiori ut 10 ad 7) longiori, supra longitudinaliter sat profunde 5-sulcato, in partibus medianis elevatis glabro sparsim subfortiter punctulato, alibi ut caput pubescenti confertim subtiliter (latera versus magis grosse) punctulato, antice subtruncato, lateribus fere rectis, angulis posticis haud divaricatis; elytris breviter pubescentibus, ad apicem valde acuminatis, sat fortiter striatis, interstitiis leviter convexis punctulatis. Long., 7 l.; lat., 1½ l.

There seems to be no doubt that this species and the following should be associated generically with that for which Dr. Candèze proposed the name *Parasaphes*. They bear a remarkable general resemblance to *Chrosis*, but differ from it in respect of important structural characters,—notably their very much shorter head and the widely different form of their mesosternum and tarsi. The former is (not horizontal but) strongly declivous; and the latter have their basal joint very elongate, the 2nd scarcely half as long as the basal one and slightly dilated; the 3rd still shorter,

more strongly dilated and sublamellate; the 4th extremely small (little more than a nodule); the 5th about the same length as the preceding 3 together. I have before me specimens of an insect that seems certainly to be Candèze's typical species of the genus (*P. elegans*), but it is from Tasmania (my own capture) not Queensland (Candèze's locality.) There are thus known to me three species of the genus, *P. elegans* being distinguishable from the other two by, *inter alia*, the much less acuminate apices of its elytra, and *P. quinquesulcatus* from the other two by, *inter alia*, the non-divaricate hind angles of its prothorax. In all three the carina within the hind angle of the pronotum is very strongly defined and continued more or less distinctly to, or even beyond, the middle of the pronotum. My specimen of *P. quinquesulcatus* is probably a female, as the antennæ scarcely pass the base of the prothorax.

Victoria (Dividing Range).

P. bicolor, sp. nov. Angustus; valde elongatus; niger, pronoti sulco mediano lateribusque et prosterni lateribus rufis; capite crebre subfortiter punctulato, pilis albidis sat elongatis vestito; prothorace quam ad basin latiori ut 7 ad 6 (quam ad medium latiori ut 7 ad 5) longiori, supra longitudinaliter sat profunde 5-sulcato, in partibus medianis elevatis glabro sparsim subfortiter punctulato, alibi ut caput pubescenti, confertim subtiliter (latera versus magis grosse) punctulato, antice subtruncato, lateribus leviter arcuatis, angulis posticis divaricatis; elytris breviter pubescentibus, ad apicem valde acuminatis, sat fortiter striatis, interstitiis punctulatis leviter convexis.

Maris antennis prothoracis basin longe, feminæ parum, superantibus. Long., $5\frac{3}{4}$—$6\frac{1}{2}$ l.; lat., $1\frac{1}{5}$—$1\frac{1}{2}$ l.

Victoria (Dividing Range).

MALACODERMIDÆ.

SELENURUS.

S. fernshawensis, sp. nov. Elongatus; capite nigro, antice flavo-notato, mandibulis plus minusve luteis, antennis palpisque nigro-piceis; prothorace luteo, macula magna discoidali nigra ornato, hac antice margines laterales attingenti, postice bifida; elytris viridibus ante apicem macula suturali flava ornatis; corpore subtus nigro, flavo-maculato; pedibus piceis; capite prothorace lævibus; hoc subquadrato postice paullo angustato, margine antico late rotundato, angulis subrotundatis; elytris crebre rugulose punctulatis, quam abdomen multo brevioribus, ad apicem dehiscentibus. Long., 4—5 l.; lat., $\frac{4}{5}$—1 l.

Congeneric with a species I described in Tr.R.S., S.A., 1892, pp. 220-221, but referred to *Selenurus* subject to the doubt I have already expressed *(loc. cit)*.

Victoria (Fernshaw).

TELEPHORUS.

T. pulchellus, Macl. var. (?) *notophilus*. I have before me two specimens belonging to the S.A. Museum, which appear to be a remarkable variety of *T. pulchellus*. They differ from the type in having a wide very conspicuous and sharply limited yellow fascia on the elytra a little behind the middle. I can, however, find no other difference. I have seen hundreds of specimens of *T. pulchellus*, but never one (except these) in which the elytra were not unicolorous. The specimens before me are from Carrieton (South Australia) and are male and female.

CLERIDÆ.

The Australian *Cleridæ* are much in need of revision, such descriptions as have been published being scattered through a great variety of (chiefly non-Australian) works, and many of them still standing as referred to genera with which they have nothing to do. The following notes are a contribution to the task of reducing them to order.

I am not aware of the existence of any memoir showing the relation to each other of the various genera among which the Australian *Cleridæ* are distributed, except Lacordaire's "Genera des Coléoptères," where such of the Australian genera as were known forty-three years ago find a place among the *Clerid* genera of the world, and some memoirs by the Rev. H. S. Gorham dealing with such as were known of them in certain groups of the *Cleridæ* twenty-four years ago, where again they are placed among the *Cleridæ* of the world belonging to those groups. I have, therefore, considered it desirable to provide a tabulated statement of the characters distinguishing the genera to which the known Australian *Cleridæ* can be referred for the use of students in Australia.

Herr Lohde has recently published a catalogue of the *Cleridæ* of the world, which is of the highest possible value, and includes nearly all the corrections that have been made in the generic position of the Australian species, but as a large part of the erroneous generic determinations of the earlier describers have never been corrected in any published treatise those determinations are still, of course, uncorrected in this recent catalogue. As far as possible I have corrected these in the following pages.

I begin with a tabulation of the characters of the *Clerid* genera known to occur in Australia, and then furnish more particular notes concerning some of those genera, together with the diag-

nosis of two new genera, descriptions of some new species, and a revision of one genus (Aulicus).

Tabulation of Australian *Clerid* genera :—

A. Eyes more or less emarginate.
- B. All the tarsi (viewed from above) distinctly 5-jointed.
  - C. Head elongate, parallel ... ... Cylidrus.
  - CC. Head oval ... ... Tillus.
- BB. Genera not having all the tarsi (viewed from above) distinctly 5-jointed.
  - C. The front tarsi (viewed from above) distinctly 5-jointed.
    - D. Eyes strongly emarginate.
      - E. Space between the eyes considerably wider than diameter of part of eye visible from in front.
        - F. Club of antennæ lax and long ... Clerus.
        - FF. Club of antennæ abrupt and comparatively short ... ... Eleale.
      - EE. Space between eyes equal to diameter of part of eye visible from in front ... Stigmatium.
      - EEE. Space between eyes much narrower than diameter of part of eye visible from in front ... ... Omadius.
    - DD. Eyes scarcely emarginate ... ... Orthrius
  - CC. The front tarsi viewed from above appear to have only 4 joints.
    - D. The appearance (from above) of the tarsi having only 4 joints arises from the basal joint being concealed under the second.
      - E. The eyes very coarsely granulate.
        - F. The apical joint of the maxillary palpi securiform ... ... Opilo.
        - FF. The apical joint of the maxillary palpi elongate subtriangular.
          - G. Body winged ... ... Natalis.
          - GG. Body apterous ... ... Cormodes.
      - EE. The eyes much more finely granulate.
        - F. The apical joint of the maxillary palpi not securiform.
          - G. Club of antennæ gradual and very feeble ... ... Metabasis.
          - GG. Club of antennæ abrupt and strong Cleromorpha.
        - FF. The apical joint of the maxillary palpi more or less strongly securiform.
          - G. Mesosternum vertical in front ... Zenithicola.
          - GG. Mesosternum not vertical in front.
            - H. Elytra with conspicuous basal fascicles ... ... Trogodendron.
            - HH. Elytra with large basal tubercles Olesterus.
            - HHH. Elytra at base even (or nearly so).
              - I. Pronotum with a conspicuous ante median transverse sulcus.
                - J. Elytra not more than twice as long as (at their base) wide Aulicus.
                - JJ. Elytra much more than twice as long as (at their base) wide.

K. The whole surface of the elytra coarsely rugulose; head elongate ... ... Scrobiger.

KK. Apical one-third or more of elytra smooth; head short ... ... Neoscrobiger.

II. Pronotum not having an ante-median sulcus.

J. Hind tarsi much longer and narrower than front tarsi ... Tarsostenus.

JJ. All the tarsi very similar *inter se* ... ... Tarsostenodes.

DD. The appearance (from above) of the tarsi having only 4 joints arises from the 4th joint being a mere nodule.

E. Antennal club composed of 8 serrate joints ... ... Tenerus.

EE. Antennal club composed of not more than 4 joints.

F. Apical joint of maxillary palpi strongly securiform ... . Thanasimomorpha.

FF. Apical joint of maxillary palpi not (or scarcely) securiform.

G. Eyes very strongly granulate ... Pylus.

GG. Eyes much less strongly granulate.

H. Antennal club abrupt and strong.

I. Pronotum much expanded laterally but scarcely margined ... Parapylus.

II. Pronotum conspicuously margined laterally.

J. Apical joint of maxillary palpi elongate-triangular ... Corynetes.

JJ. Apical joint of maxillary palpi oval ... ... Necrobia.

HH. Antennal club elongate narrow and feebly defined .. .. Crobenia.

CCC. The front tarsi (viewed from above) appear to have only 3 joints ... ... Paratillus.

AA. Eyes entire.

B. Elytra wider at their base than the base of the prothorax ... ... Lemidia.

BB. Elytra not wider at their base than the base of the prothorax ... ... Allelidia.

TILLUS.

The only Australian species that stand in this genus in Catalogues (Lohde's included) are *hilaris*, Westw., and *dux*, Westw. The former of these is stated by Gorham (Cist. Ent., II., p. 62) to be congeneric with *Tillus bipartitus*, Blanch., and greatly to resemble it, but not to be a *Tillus*. *T. bipartitus* is the type of my genus *Thanasimomorpha* (my identification of *T. bipartitus* was confirmed by Dr. Sharp). I have before me a small *Clerid* from Victoria which agrees well with Westwood's description of *T. hilaris* (a Tasmanian species) in every respect except in being a trifle small and having its tibiæ and tarsi infuscate. It differs

from *T. bipartitus* considerably in the sculpture of its pronotum but otherwise its structural characters seem identical,—granulation and shape of eyes, length and structure of antennæ, structure of palpi, &c. Like *T. bipartitus* it seems to have only four tarsal joints even under a strong power, and it is not easy to feel quite certain which is the missing fifth joint, but I am fairly confident that it is the penultimate which is abnormal, and exists only as a minute nodule at the base of the apical joint. I have no doubt that the specimen before me either is *T. hilaris* or is excessively close to it, and that *T. hilaris* is a *Thanasimomorpha*, but whatever it is, it is not a *Tillus.*

T. dux, Westw., is a complete enigma. I incline to the opinion that its author was mistaken in calling its claws appendiculate, in which case it might well be a large *Natalis*, but if he was not mistaken I can make no suggestion about it except in saying that the description, and especially the size, do not suggest a true *Tillus.* I am therefore of opinion that there is no true *Tillus* known in Australia. It certainly seems unlikely that among all the Australian *Cleridæ* before Mr. Westwood there was not a *Natalis* but that there was a specimen, of the remarkably large size of a *Natalis*, subsequently (so far as I can discover) not mentioned by any author, and appertaining to a different genus.

OPILO.

To this genus nine Australian species are attributed in Masters' Catalogue; in Lohde's Cat. they stand at the same number but are not the same insects, *O.* (*Notoxus*) *ephippium*, Boisd., and *mærens*, Westw., having been removed, the former (vide Tr. Roy. Soc., 1891, p. 303) having been shown to be a *Trogodendron* and the latter having been referred (I think wrongly,—vide infra) by Chevrolat to *Scrobiger.* Their places are filled by *O. variipes*, Chevr. (apparently omitted accidentally by Masters) and *O. floccosus*, Schenk., on which a note will be found below. A change of name also occurs, *Whitei*, Gorh., being substituted for *apicalis*, White (nom. præocc.), a synonym that appears to have escaped Mr. Masters' notice.

Concerning the species referred to *Opilo* in Lohde's Catalogue I offer the following notes:—

O. congruus, Newm. A true *Opilo;* very variable and common all over Australia.

O. eburneocinctus, Gorh. Not known to me. Probably a true *Opilo.*

O. ephippiger, White. Identical with *Trogodendron* (*Notoxus*) *ephippium*, Boisd., as pointed out by me (Tr. Roy. Soc., S.A., 1891, p. 303). Herr Lohde does not appear to have observed my note.

O. floccosus, Schenkl. I have in my collection a *Clerid* which agrees with Herr Schenkling's description of this species in every respect except that it has the palpi of a *Natalis* and should be referred to that genus. As Schenkling states that *floccosus* has the palpi of an *Opilo* I am compelled to suppose that the insect before me is not his species in spite of its agreement in other respects with his excellent description. I shall not however venture on describing it on the ground that he may possibly have incorrectly observed the palpi he described. It bears some resemblance to but is quite distinct from *Natalis*, *Leai*, Blackb.

O. incertus, Macl. Not known to me. Probably a true *Opilo*.

O. Pascoei, Gorh. A true *Opilo*. I have it from Victoria.

O. sexnotatus, Westw. Not a true *Opilo* as it has finely granulated eyes. I give it a new generic name (*vide infra*).

O. variipes, Chevr. A true *Opilo*, apparently very close to *O. congruus*, Newm.

O. Whitei, Gorh. (*apicalis*, White). Unknown to me. I doubt its being a true *Opilo*.

Thus it appears that there are five known Australian species confidently referable to *Opilo* and two doubtfully attributable to it.

NATALIS.

N. debilis, sp. nov. Mas.? Elongata; angusta; sat parallela; subtus sat sparsim pubescens; supra pilis erectis elongatis sparsis vestita; nigra, pedibus antennis et corpore subtus picescentibus; antennis sat elongatis sat gracilibus; oculis minus prominulis; capite confertim subtilius subaspere punctulato, puncturis paullo majoribus sparsim intermixtis; prothorace quam latiori ut 7 ad $5\frac{1}{8}$ longiori, ut caput punctulato et ad latera nonnihil (fere ut *N porcatæ*, Fab.) ruguloso, sulco longitudinali mediano lineari sat elongato impresso, pone medium utrinque fortiter dilatato-rotundato; scutello confertim subtiliter punctulato; elytris ad apicem inermibus, seriatim punctulatis, puncturis quadratis (antice profundis sat magnis, postice gradatim minoribus minus profunde impressis); interstitiis alternis leviter costiformibus; tibiis anterioribus 4 arcuatis; abdomine sparsim subtiliter punctulato, segmentis postice late membranaceo-marginatis; pedibus sat gracilibus, femoribus posticis perlongis; tarsis sat elongatis sat gracilibus. Long., $6\frac{1}{2}$ l.; lat., $1\frac{3}{5}$ l. (vix).

At once distinguishable from all the previously described *Natales* except *porcata*, Fab., by the close even puncturation of the entire disc of its pronotum and the feebleness of the lateral rugulosity of that segment. From *porcata* it differs *inter alia* by its black colour, by its distinctly less convex eyes, by its very much more elongate prothorax, by the very evidently closer and

finer puncturation of its pronotum, and by the very wide membranous hindmargin of each ventral segment,—which is certainly not due to the abdomen of the specimen before me being distorted or unduly dilated. I have little doubt of the specimen described being a male, in which case the species is distinguished from many of its congeners (but not from *porcata*, Fab.) by the absence of patches of close sexual puncturation on the ventral segments. In my tabulation of *Natalis* (Tr. R.S., S.A., 1899, pp. 29-30) the inclusion of this species would cause the substitution for the last line of the following: —

AA. Disc of prothorax closely and evenly punctulate.
  B. Prothorax much longer than wide ... ... *debilis*, Blackb.
  BB. Prothorax very little longer than wide .. ... *porcata*, Fab.

S.A. (basin of Lake Eyre); taken by Herr Koch near Farina.

THANASIMUS.

There seems to be reason for regarding all the Australian insects that have been referred to this genus as incorrectly placed there. *T. accinctus*, Newm., has already been made the typical species of a new genus (*Metabasis*, Gorh.), and Mr. Gorham has already referred (correctly, I have no doubt) *T. sculptus*, Macl., and his own *T. rufimanus* to the genus *Aulicus*. *Necrobia eximia*, White (which has been attributed to *Thanasimus* by some authors,—*e.g.*, Gorham) is certainly not a *Thanasimus* in my opinion,—but here I am writing from memory (having examined a specimen not at this moment available) and so will not at present discuss its position more particularly. I know of only three other Australian species that have been placed in *Thanasimus* (viz., *acerbus*, Newm., *confusus*, Newm., and *cursorius*, Westw.), and they undoubtedly belong to the genus *Stigmatium*. They are all described insufficiently for confident identification among congeners so numerous and superficially so closely resembling each other as are the species of *Stigmatium*, but it seems to me probable that *acerbus* and *cursorius* are founded on the same insect and that it is also the same which M. Kuwert has since described as *S. dispar*. I think I know *S. confusus*, Newm., as a species that I have met with in Victoria (Newman's locality) not rarely, and it is probably identical with one or more of the species that have since been described as *Stigmatia* by other authors, but without examination of types it is difficult to arrive at a confident opinion.

CLERUS.

I regard it as extremely doubtful whether any true *Clerus* occurs in Australia. Eight Australian species are ascribed to the genus in Masters' Catalogue, one of which (*crassus*, Newm.) disappears in Lohde's Cat., having been reported (Tr. R. Soc., S.A.,

1891, p. 303) as a *Zenithicola.* Of the remainder *C. apicalis*, Macl., *Mastersi*, Macl., and *delicatulus*, Bohem., are *Aulici* (as noted below); *C. cruciatus*, Macl., is probably a *Lemidia*,—certainly not a *Clerus; ventralis*, Westw., is evidently an *Olesterus; C. guttulus*, White, has been stated by Gorham to be congeneric with *Tillus bipartitus* and therefore mentioned by me (*loc. cit.*, p. 304) as probably a *Thanasimomorpha* (but I have since identified it, and now place it,—as noted below,—in my new genus *Tarsostenodes*). *C. sepulcralis*, Westw., remains; I have not to my knowledge seen it, nor do I find anything in its description on which I can form a decided opinion as to its generic position. I note however that in a recent memoir Herr Schenkling mentions it as "*Clerus*" *sepulcralis* from which it seems probable that it is at any rate near *Clerus.* Perhaps it is an *Orthrius* (an Australian ally of *Clerus* named by Mr. Gorham and distinguished *inter alia* by its scarcely emarginate eyes).

CLEROMORPHA.

In his diagnosis of this genus (Cist. Ent., II., p. 83) Mr. Gorham indicates the number of tarsal joints visible on their upper surface as doubtful,—owing I presume to the type having lost its tarsi. His conjecture that the number is four is correct.

AULICUS.

Under this name Spinola (its author) included species from America and Australia. Later, Gorham expressed the opinion that the species of the two continents ought to be separated, but says that not having examined any of the American species he "has not ventured on the alteration," and at the same time proposes the name *Phlogistus* for the Australian species, though admitting it doubtful whether Spinola did not consider an Australian species the typical one. This is decidedly puzzling, and does not seem to me to furnish sufficient reason for rejecting Spinola's name in respect of the Australian species, although I observe that in his recent "Cleridarum Catalogus," Herr Lohde has done so but (as was of course to be expected in a mere Catalogue) without assigning a reason. It is quite possible that the need of the change of name may eventually be demonstrated, but in the absence of a diagnosis of *Phlogistus*,—which has not been provided by any author,—I retain the name *Aulicus* for the present.

The Australian species of this genus are in great confusion, not a few of them having been attributed by their authors to the old genera *Thanasimus* and *Clerus* and still standing there even in Herr Lohde's recent Catalogue. Having recently had occasion to examine a considerable number of specimens of *Aulicus* I have

taken the opportunity to study the widely scattered literature of the subject and offer the following notes as an attempt at a systematic treatment of the Australian species. Under the generic name *Aulicus* 21 specific names have been proposed for them, and two species described as *Thanasimi* and one described as *Clerus* have been shown to be in reality *Aulici*,—viz., *T. rufimanus*, Gohr., and *sculptus*, Macl., and *C. instabilis*, Newm. I now draw attention to the fact that the following also appear to be decidedly members of the same genus,—viz., *Clerus Mastersi*, Macl., *apicalis*, Macl., and *delicatulus*, Bohem. Beside the above *Xylotretus scrobilata*, Spin., is stated by Gorham to be "probably an *Aulicus*,"—a reference that is followed (but with a ?) by Herr Lohde. In this I cannot concur. Spinola describes the insect as having "5 or 6" rows of large deep foveæ on the elytra. But in all the large number of *Aulici* I have examined I have never seen one in which there is any doubt at all about the number of rows on each elytron being *ten*,—so emphatically is this the case that I am quite satisfied of the presence of that number of rows of quadrate foveolæ being a reliable generic character (as far as Australian species are concerned). Moreover Spinola describes *X. scrobilatus* as having a "transverse fold" on the non-foveolate apical portion of the elytra,—a character to which there is no approximation whatever in any *Aulicus* (or indeed in any Australian *Clerid*) known to me. I incline to the opinion that *X. scrobilatus* is erroneously attributed to Australia. If not, it probably represents a genus as yet uncharacterised. But if the "transverse fold" can be disregarded as (say) a deformity of the individual specimen, it is possible that the insect in question is a *Zenithicola*, as in species of that genus (*e.g.*, *australis*, Boisd.) the foveolæ of the lateral are so much smaller than those of the discal series that it would be correct to say there are "about 5 or 6 rows of *large deep* foveæ," though even in that case one would wonder that the describer had not added that there are also other rows of much smaller foveæ. The generic identification of *X. scrobilatus* is impossible without an inspection of the type, but whatever it may be it is not an *Aulicus* unless the description is outrageously incorrect. Unfortunately Spinola gives a wrong reference to his figure, which imparts a further difficulty into the matter (as Gorham points out, Cist. Ent., II., 88), but the figure that is probably intended for *X. scrobilatus* looks as if it might represent a *Zenithicola*.

Altogether, then, there are 27 names that must be regarded as having been given to Australian species of *Aulicus*, but a considerable number of these are synonyms, some of which have already been shown to be so. It will be convenient, however, to recapitulate them all now. The following, however, I believe to be founded on error, or mere conjecture :—

A. episcopalis, Spin., wrongly regarded by Spinola as a synonym of *instabilis*, Newn. (discussed below).

A. corallipes, Chevr., quoted by Herr Lohde as a synonym of *foveicollis*, Macl. This seems to me highly improbable. No reason is given for the reference. *A. foveicollis* is practically undescribed. It is a Queensland species, and the type is at Sydney.

A. corallipes is a familiar Tasmanian species.

A. castanipes, Westw., and *A. tibialis*, Westw. (described by White, *Clerid*, IV. 60) placed in all catalogues known to me as synonyms of *A. instabilis*, Newm. I consider this almost certainly wrong. It is possible the names were given to varieties of *A. episcopalis*, Spin., but the matter could not be cleared up without examination of the types (which are no doubt in the Br. Museum).

The following synonymy seems to be correct :—

A. affinis, Gorh.=*A. samaragdinus*, Gorh. Its author says of *affinis* "possibly only a var."

A. varicolor, Chevr.=*A. multicolor*, Chevr. Its author says of *varicolor* "probably only a var."

A. albofasciatus, Gorh.=*A. ochrurus*, Chevr. Mr. Gorham has already noted this synonymy. Both descriptions were published in 1876, and it seems doubtful which has the priority.

A. (*Thanasmus*) *rufimanus*, Gorh.=*A. chrysurus*, Chevr. Already noted by Mr. Gorham.

A. splendidus, Chevr.=*A. sculptus*, Macl. Already noted by Mr. Gorham.

The following synonymy has not been noted previously :—

A. ochrurus, Chevr. (=*albofasciatus*, Gorh.)=*A.* (*Clerus*) *apicalis*, Macl. (Macleay's name has priority).

A. viridissimus, Pasc. is (as more fully indicated below) probably a synonym for *A.* (*Clerus*) *delicatulus*, Bohem.

It should be added that in Herr Lohde's Catalogue the name "auratus, Gory., i.l." occurs as a synonym of *A. instabilis*, Newm. I do not know this insect, and have not seen the description of it, so can express no opinion about it.

Assuming the correctness of the above synonymic notes, 9 of the 27 names referred to above must be regarded as mere synonyms.

Of the 18 names remaining I have been able to identify 14 with insects on which they appear to have been founded. The four that I have not been able to identify are :—

A. foveicollis, Macl. Practically undescribed.

A. imperialis, Gorh. Seems to be differently colored from any *Aulicus* known to me. The structural characters mentioned would fit many *Aulici*.

A. lemoides, Pasc. I have not seen any *Aulicus* that will fit the description. The few structural characters mentioned are founded on a comparison with "*A. instabilis*, Newm.," but it is impossible to ascertain (without reference to his collection) to what *Aulicus* Pasc. attributed that name. I should conjecture *A. lemoides* to be possibly a var. of *A. rufipes*, Macl.

A. mellinipes, Chevr. I am convinced that I have not seen this species. If the statement that its prothorax is longer than wide is strictly accurate (by measurement) I am doubly sure that I have not seen it.

In the following pages I describe nine new species of *Aulicus* and furnish notes on several of the previously described species. I also furnish a tabulation of all the species except the four remarked on above. In this tabulation I have found it necessary in several instances to rely upon colour distinctions, because in the case of species that I have identified only by means of the descriptions it might be misleading to characterise them by characters not actually mentioned in the descriptions, as there is of course a possibility of some of the identifications being wrong, —but, as it is, the tabulation is right according to the authors' descriptions even if my identifications are wrong,—except in the case of *instabilis*, Newm., *episcopalis*, Spin., *delicatulus*, Bohem, and *corallipes*, Chevr., of which I have not seen authentic specimens, but have assumed the correctness of my identification. I may say, however, that I have not the slightest doubt about all the species included in the tabulation being perfectly valid ones. The genus has been in so complete a state of confusion that it seems worth while to treat it as a whole (which has not been done before) in respect of its Australian members, even if my treatment of it should prove eventually to require a few corrections.

Tabulation of species of the genus *Aulicus* :—

A. Elytra variegated with different colouring or pubescence in transverse zones.
  B. At least one of the zones testaceous.
    C. The apex and a median (or submedian) zone testaceous ... ... *apicalis*, Macl.
    CC. Elytra having only a median testaceous zone *crœsus*, Blackb.
    CCC. Elytra having the base and a median zone testaceous.
      D. Prevailing colour of elytra bronzy-red,—no black ... ... *Mastersi*, Macl.
      DD. Prevailing colour of elytra black ... *dives*, Blackb.
  BB. No testaceous colouring on the elytra.
    C. Apical part of elytra not aureo-villose.
      D. Club of antennæ black ... ... *multicolor*, Chevr.
      DD. Club of antennæ testaceous ... ... *sculptus*, Macl.
    CC. Apical part of elytra aureo-villose ... *chrysurus*, Chevr.
AA. Elytra not variegated with different colouring or pubescence in transverse zones.
  B. Antennæ black ... ... *lætus*, Chevr.

BB. Antennæ not black.

C. Antennæ reaching back to the base of the prothorax ... . *instabilis*, Newm.

CC. Antennæ shorter.

D. Ninth and tenth elytral series quite distinct from each other and separated by a well-defined interstice to beyond middle of elytra ... ... *episcopalis*, Spin.

DD. Ninth and tenth elytral series not as in *A. episcopalis*.

E. External face of tibiæ traversed by a well-defined entire longitudinal carina.

F. Under surface of head and prothorax of dark colour.

G. Seriate sculpture of elytra continuing (gradually enfeebled) to apex *nigrohirtus*, Blackb.

GG. Seriate sculpture of elytra ceases suddenly considerably before apex.

H. No longitudinal sulcus on pronotum behind the front transverse sulcus ... ... *smaragdinus*, Gorh.

HH. A well - defined longitudinal sulcus on pronotum behind the front transverse sulcus... *robustus*, Blackb.

FF. Under surface of head and prothorax pale yellow ... ... *rufipes*, Macl.

EE. External face of tibiæ not having a continuous longitudinal carina.

F. The transverse sulci of the pronotum connected by a strong longitudinal sulcus.

G. Transverse interstices of elytral foveolæ strongly cariniform and crossing several series ... ... *Plutus*, Chevr.

GG. Transverse interstices of elytral foveolæ fine, scarcely raised, and short ... ... *delicatulus*, Bohem.

FF. Transverse sulci of pronotum not connected by a strong longitudinal sulcus.

G. Front of clypeus not both notably narrower than interval between eyes and also much emarginate.

H. Sculpture of elytra quasi-uniform from base to apex, only becoming gradually finer and closer (but not less rugulose) in approaching the apex ... ... *eremita*, Blackb.

HH. Sculpture of elytra much enfeebled at base, gradually becoming towards apex more or less finer, but still continuing rugulose.

I. Prothorax notably wider across apex than across base. (Legs entirely dark) ... ... *amabilis*, Blackb.

II. Prothorax scarcely wider across apex than across base.

J. Pronotum closely evenly and somewhat strongly punctured. (Femora red) ... *cribratus*, Blackb.

JJ. Pronotum about middle of basal part very finely and very sparsely punctured. (Femora dark) ... ... *modestus*, Blackb.

HHH. Sculpture of elytra much enfeebled at base, and behind suddenly changing to fine non-rugulose (or scarcely rugulose) puncturation considerably before the apex.

I. Femora entirely dark... ... *mundus*, Blackb.

II. Femora testaceous or red ... *corallipes*, Chevr.

GG. Front of clypeus considerably narrower than interval between eyes and also much emarginate *parvulus*, Blackb.

A. Crœsus, sp. nov. Supra cupeo-purpureus, elytris mox ante medium fascia testacea (hac nec suturam nec marginem lateralem plane attingenti) ornatis, corpore subtus cœruleo, labro palpis antennisque testaceis, pedibus obscuris (tibiis anticis subtus et tarsis anticis dilutis; pilis albidis elongatis sat sparsim vestitus; capite crebre fortiter subrugulose punctulato; antennis prothoracem medium vix attingentibus, articulo ultimo ad apicem emarginato; prothorace manifeste transverso, fere ut caput (sed antice minus crebre) punctulato, antice tubulato, ad partis tubulatæ basin transversim fortiter arcuatim sulcato, pone sulcum late concavo, in partis concavæ fundo longitudinaliter sulcato, mox ante basin transversim sulcato, lateribus inter sulcos transversos fortiter rotundatis; elytris 10-seriatim grosse foveolatis, seriebus basin versus vix minus distinctis vix elytrorum partem apicalem tertiam attingentibus, hac puncturis sat grossis confuse minus crebre impressa, seriebus 9ª 10ª que carina distincta ad elytrorum partem apicalem tertiam divisis. Long., $3\frac{3}{5}$ l.; lat., $1\frac{3}{10}$ l. (vix).

This species is readily distinguishable from all previously described Australian *Aulici* by its colour and marking. It will be convenient to compare it and others of its congeners with *A. chrysurus*, Chevr. (*Thanasimus rufimanus*, Gorh.), that being a previously described species which there can be no difficulty in identifying with certainty. Compared with it the present species *inter alia* differs as follows:—Antennæ much shorter (joints 9 and 10 much more transverse, joint 11 much more emarginate at apex), prothorax more transverse with much more strongly rounded sides, foveæ of the elytral series much larger (reaching the base and extending much further towards the apex). Its nearest ally is the species that I regard as *A. episcopalis*, Spin. (=*instabilis*,

Spin. var.) from which it differs (apart from colour and markings) chiefly by its shorter and more convex form, the larger and less crowded foveæ of its elytral series, the less abrupt cessation posteriorly of the same foveæ, and their continuity to the actual base of the elytra. The antennæ of these two species are extremely similar, also the conspicuousness of the ninth and tenth series of foveæ and their interstice to the commencement of the smooth apical part of the elytra.

S. Australia (Yorke Peninsula).

A. dives, sp. nov. Cyaneus, elytrorum parte dimidia basali testacea utrinque macula magna atro-cyanea humerali ornata (parte dimidia apicali atro-cyanea utrinque macula magna sanguinea ante-apicali notata), antennis palpis tibiis anticis tibiarum intermediarum apice et tarsis anticis intermediisque testaceis; pilis albidis elongatis sparsim vestitus; capite fortiter minus crebre punctulato; antennis prothoracem medium haud attingentibus, articulis 9°—11° transversis, 11° ad apicem leviter emarginato; prothorace sat fortiter transverso, fere ut caput (sed nonnihil magis grosse) punctulato, antice breviter tubulato, ad partis tubulatæ basin transversim fortiter arcuatim sulcato, pone sulcum late concavo, in partis concavæ fundo longitudinaliter sulcato, mox ante basin transversim sulcato, lateribus inter sulcos transversos sat fortiter rotundatis; elytris 10-seriatim grosse foveolatis interstitiis minus angustis, seriebus basin versus obsoletis nec elytrorum partem apicalem tertiam attingentibus, hac sparsim sat subtiliter punctulata, seriebus 9ª 10ª que vix ultra elytra media attingentibus. Long., 3 l.; lat., $1\frac{1}{5}$ l. (vix).

In this species the apical joint of the maxillary palpi is more strongly securiform than in most of its congeners. Lacordaire tabulates *Aulicus* as having that joint securiform, but in diagnosing the genus says that it is of the form of an elongate triangle, which is quite correct as regards most of the species,—but in this one the triangle is scarcely elongate. It may be noted, too, that Lacordaire calls the claws of *Aulicus* "simple," but I find them to have a very small and feeble sub-basal tooth which in the present species is scarcely traceable. This species is remarkable for its short antennæ, having their apical joint distinctly transverse. The seriate punctures of the elytra are scarcely smaller than in *A. crœsus* but they are less sharply defined, their interstices being less narrow and carina-like than in most *Aulici*. Apart from coloring and pattern the present species differs from *A. chrysurus*, *inter alia* by the very much coarser seriate punctures of its elytra, from *A. crœsus* by the seriate puctures of the elytra not nearly reaching the base, from *A. episcopalis* by the

9th and 10th series scarcely passing the middle of the length of the elytra, and from *A. apicalis*, Macl., by the apical part of its elytra nearly black. It is perhaps nearest to *A.* (*Clerus*) *Mastersi*, Macl. The characters attributed to that species (apart from those relating to colour) are valueless for identification, being common to almost all *Aulici.* The pattern of *A. Mastersi* seems to bear a general resemblance to that of the present insect, but the general colour of the elytra is said to be "bronzy red" which is certainly not the general colour in *A. dives*, and the very great distance apart of the localities in which the two insects were taken renders it unlikely that they are varieties of one species.

S. Australia (Mt. Lofty Range).

A. nigro-hirtus, sp. nov. Supra cœruleus purpureo-micans, subtus cyaneus, antennis (clava nonnihil infuscata excepta) palpis et tarsis anticis testaceis, tibiis anticis subtus ferrugineis, pedibus alibi purpureis; pilis sat elongatis (his in corpore supra obscuris, subtus albidis) vestitus; capite crebre fortius nec rugulose punctulato; antennis prothoracem medium vix superantibus, articulo ultimo fere ut generis *Eleale* appendiculato; prothorace vix transverso, fere ut caput punctulato sed puncturis rugis transversis intermixtis, postice breviter (sed antice nullo modo) tubulato, antice transversim arcuatim (postice recte) sulcato, inter sulcos æqualiter convexo, lateribus ab angulis anticis fere ad basin æqualiter arcuatis; elytris 10-seriatim foveolatis, seriebus 9ª 10ª que ultra medium vix distinctis ceteris in elytrorum partem quartam apicalem continuis, foveolis quam *A. chrysuri*, Chevr., parum magis grossis, parte apicali confuse nec crebre punctulata; tibiis extus carinatis. Long., 4 l. (vix); lat., $1\frac{2}{5}$ l.

The notable characters of this species are the strongly appendiculate apical joint of its antennæ which is scooped out on its wide compressed face in such fashion as to make it from a certain point of view look like two joints, the pronotum without concavity or longitudinal sulcus behind the anterior transverse sulcus, and the tibiæ with a conspicuous longitudinal carina on their external face. The foveæ of the elytral series are notably less coarse and more closely placed than in the species I call *episcopalis*, Spinola; the series (as such) are exceptionally conspicuous owing to the longitudinal interstices being distinctly more elevated than the interstices separating fovea from fovea in the series. Perhaps nearest to *A. imperialis*, Gorh., but evidently very distinct from it as that species is described as having its pronotum abruptly narrowed in front and much depressed dorsally.

N. Queensland.

A. instabilis, Newm. There seems to be much confusion about

this species. It is quite clear to me that Spinola did not identify it correctly, and I should say that in all probability Newman himself mixed two species under the name. Newman's very brief description mentions only one character that is of real value in determining what insect he had before him, viz., "protibiæ subtus testaceæ." Trivial as this character might seem I have examined sufficiently long series of several *Aulici* to enable me to say that it is of great value. To this clue may be added another in the fact that almost all the *Cleridæ* described by Newman are Victorian species, and still another in the *size* (long., $\frac{4}{10}$ of an inch) being stated. Now I have taken somewhat plentifully in Victoria two species of *Aulicus* whose front tibiæ are invariably black (or dark piceous) on their upper surface and testaceous beneath, the two colours being in quite abrupt and conspicuous contrast. My opinion is that Newman had both these insects before him and did not observe their specific difference. One of them is about of the size Newman quotes, and of deep violet blue colour with elongate antennæ,—the other is decidedly smaller and of a bright green colour with shorter antennæ. Newman says "Colore instabilis, nunc viridis, nunc violaceus" and mentions no other character that is not generic except the peculiar colouring of the front legs. As the size given is that of the larger insect just referred to I feel little doubt of its having been that on which the species *instabilis* was founded and conjecture that either Newman had before him also a green variety (unknown to me) of it, or that he had before him the smaller species referred to above and overlooked its specific difference from the specimen on which he founded his description (or at all events his measurement).

I feel very little doubt that *A. instabilis*, Spinola, is a species that occurs in many parts of S. Australia and even extends into the S.-Eastern part of Western Australia, and is much more variable in colouring than I have found the species to be which I regard as *instabilis*, Newm. Its front tibia are not of two colours divided longitudinally, but are (as Spinola describes them) wholly dark except near the apex where they have a tendency to become testaceous. The species differs from that mentioned above as *instabilis*, Newm., *inter alia* by its shorter antennæ, and the considerably larger seriate punctures of its elytra which moreover are well defined on a larger area of the elytra (becoming obsolete only close to the base and in the apical one-fourth), the ninth and tenth rows being separated by a continuous distinct carina quite into the apical one-fourth of the elytra. As Spinola described a colour-var. of this insect under the name *episcopalis*, this latter may now stand as the name of the species.

A. robustus, sp. nov. Sat elongatus, sat convexus; supra igneo cupreus, capite pronotoque paullo obscurioribus, antennis palpisque testaceis (illarum clava et palporum labialium articulo apicali obscuris); subtus obscurus vel atro-cyaneus, pedibus læte cyaneis, tarsis anticis ferrugineis ceteris picescentibus; pilis pallidis elongatis vestitus; capite fortius sat crebre punctulato, inter oculos late leviter impresso; antennis prothoracem medium paullo superantibus, articulis 9° 10° que sat transversis 11° obovato ad apicem acuto extus leviter excavato; prothorace vix transverso, supra sparsim fortius inæqualiter nec rugulose punctulato, sat longe pone apicem arcuatim (et mox ante basin recte) sulcato, pone sulcum anticum longitudinaliter profunde breviter canaliculato, lateribus ante sulcum anticum et inter sulcos separatim rotundatis; elytris 10-seriatim foveolatis (seriebus 9^{ae} et 10^{a} haud carina acuta divisis), foveolis fere a basi ad partem posticam tertiam continuis (hic subito desinentibus), parte apicali subtiliter vix seriatim punctulata, serierum interstitiis a foveolarum interstitiis transversis tubatis; tibiis extus longitudinaliter carinatis. Long., 4—4$\frac{1}{2}$ l.; lat., 1$\frac{1}{5}$—1$\frac{3}{5}$ l.

This species bears much general resemblance to that which I take to be *A. Plutus*, Chevr., but differs from it *inter alia* by the much shorter longitudinal channel of its pronotum, by the much less coarse sculpture of its elytra, and by the well-marked longitudinal carina that traverses the whole length of the external face of its tibiæ.

N.S. Wales (Inverell; given to me by the late Mr. Olliff).

A. mundus, sp. nov. Minus elongatus, minus convexus; læte cyaneus, antennis palpis et tibiis tarsisque anticis testaceis, tibiis tarsisque posterioribus 4 picescentibus; pilis sat elongatis fulvis vestitus; capite crebre ruguloso, inter oculos fovea profunda impresso, antennis prothoracem medium paullo superantibus, articulis 9° 10° que sat fortiter transversis 11° obovato; prothorace vix transverso, supra crebre rugulose punctulato, pone apicem arcuatim (et ante basin recte) sulcato, pone sulcum anticum longitudinaliter brevissime canaliculato, lateribus ante sulcum anticum et inter sulcos separatim rotundatis; elytris 10-seriatim foveolatis (interstitio inter series 9^{am} et 10^{am} ultra elytra media haud cariniformi), foveolis in parte basali obsoletis et subito ad partem apicalem tertiam desinentibus, parte apicali subtiliter vix seriatim punctulata, serierum interstitiis a foveolarum interstitiis transversis turbatis. Long., 3 l.; lat., 1 l.

Very closely allied to *A. amabilis*, Blackb., but satisfactorily distinguishable by the absence of the subscutellar gibbosity on

the elytra and the *sudden* ending of the seriate foveolæ of the elytra at the beginning of the apical one-third part of the elytra. There is also a difference in the apical joint of the antennæ on which in *A. amabilis* there is a distinct external excavation (but not in the present species). The seriate foveolæ of the elytra are in both very similar to those of *A. chrysurus*, Chevr. Also (disregarding colour) near to *A. corallipes*, Chevr., but differing from it *inter alia* by the seriate sculpture extending scarcely into the apical one-third of the elytra, while in *corallipes* it reaches nearly into the apical one-fourth.

S. Australia (Mount Lofty Range).

A. (*Clerus*) *delicatulus*, Bohem. I have taken an *Aulicus* in the Sydney neighbourhood which I have no doubt is Bohemann's species. It does not seem to present very strong characters, its most striking feature being I think the comparatively feeble sculpture of its elytra, which consists of rows of transversely quadrate impressions separated by continuous longitudinal interstices which are (not, as they are in *A. chrysurus*, Chevr., thrown out of shape or zigzagged by still stronger transverse interstices running continuously across several of the rows but) straight. In respect of that sculpture it resembles *A. nigrohirtus*, but in that species the foveæ are considerably larger and deeper, and the interstices (both longitudinal and transverse) are considerably stronger and more cariniform; in *delicatulus* the longitudinal interstices are almost flat, and carry a straight row of fine and not very closely placed punctures. The sculpture of the median part of the elytra does not in *A. delicatulus* abruptly cease or change its character at a more or less considerable distance from the apex (as it does in many species of *Aulicus*) but merely becomes near the apex a little feebler and less seriate. The hind tibiæ and tarsi are unusually slender, which suggests the idea that *A. viridissimus*, Pasc. (also from Sydney) may be a later name for the same insect. Pascoe's statement that in *A. viridissimus* the elytra are "coarsely" punctured in rows seems perhaps inconsistent with such identity, but the expression is not altogether inapplicable to the elytra of the insect before me *absolutely*, although *comparatively* (*i.e.*, compared with most other *Aulici*) the sculpture is not coarse. Some remarks seems to be called for on my having placed *delicatulus* in my tabulation (above) with *A. Plutus*, Chevr., as having the longitudinal channel of the pronotum exceptionally long, whereas Bohemann says of its pronotum "*breviter canaliculato.*" Bohemann calls it by the name "*Clerus*," however, and it is in comparison with that of other *Aulici* that I call the longitudinal channel of its pronotum elongate. Absolutely, the channel may be called "short" as it does not reach the base, and does not nearly reach the front margin, of the pronotum.

A. eremita, sp. nov. Elongatus, sat angustus, sat convexus; colore instabilis; antennis palpisque testaceis, pedibus obscuris, tarsis anticis plus minusve ferrugineis; pilis elongatis vestitus (his in capite pronoto elytrisque fulvis, alibi dilutioribus); capite inæquali, inæqualiter punctulato, longitudinaliter sat manifeste rugato, clypeo antice subtruncato quam inter oculos caput haud angustiori; antennis prothoracem medium manifeste superantibus, articulis 9° 10° que transversis 11° ovato ad apicem acuto; prothorace quam longiori vix latiori, supra inæqualiter subtilius punctulato et transversim subtiliter rugato, sat longe pone apicem arcuatim (et mox ante basin recte) sulcato, pone sulcum anticum longitudinaliter breviter vix perspicue canaliculato, lateribus ante sulcum anticum et inter sulcos separatim rotundatis; elytris 10-seriatim foveolatis (seriebus 9ª 10ª que ultra medium vix distinctis), foveolis a basi fere ad apicem continuis sed in parte quarta postica gradatim minus seriatis minus quadratis, serierum interstitiis a foveolarum interstitiis transversis multo turbatis. Long., $2\frac{4}{5}$ l.; lat., 1 l. (vix).

I found a batch of specimens of this insect on flowers on the Dividing Range in Victoria, which vary extremely in coloring, containing green, blue, coppery, and golden individuals. The legs are usually of the general colour,—but always dark, except the front tarsi which are more or less red. The antennæ palpi and pilosity do not vary in colour. Usually the whole surface is unicolorous, but in some examples the pronotum differs in colour from the elytra and the under surface from the upper. Among the species not having a variegated pattern on the elytra, having dark legs and testaceous antennæ, the ninth and tenth rows of elytral foveolæ confused behind the middle, the elytral sculpture not abruptly ceasing (or nearly so) considerably before the apex, the antennæ not reaching back to the base of the prothorax, and having the symmetry of the longitudinal interstices of the elytra much disturbed by transverse interstices continuous across several of the longitudinal interstices, this insect is distinguished by its clypeus being in front as wide as the interval between the eyes and its elytral sculpture being continuous quite to the base o the elytra. It is also notable by the unevenness of the surface of its head, and by its elongate somewhat cylindric form.

Victoria (Dividing Range).

A. amabilis, sp. nov. Minus elongatus, minus convexus; læte viridis, antennis palpis, tibiis anticis subtus et tarsis anticis testaceis; supra pilis elongatis obscuris et brevibus testaceis (alibi pilis elongatis pallidis) vestitus; capite sat plano, inter oculos foveato, æqualiter crebre ruguloso, clypeo antice fere

truncato quam interoculos caput haud angustiori; antennis prothoracem medium paullo superantibus, articulis 9° 10° que transversis 11° ovato ad apicem acuto extus leviter excavato; prothorace leviter transverso, sat æqualiter fere ut caput ruguloso, sat longe pone apicem arcuatim (et mox ante basin recte) sulcato, pone sulcum anticum late impresso (parte impressa in fundo longitudinaliter canaliculata), lateribus ante sulcum anticum et inter sulcos separatim fortiter rotundatis; elytris 10-seriatim foveolatis (interstitio inter series 9^{am} 10^{am} que parum ultra medium distincto), prope scutellum utrinque et ad humeros manifeste tumidis, foveolis (serie subsuturali excepta) in parte basali obsoletis et in parte apicali tertia confusis et minus distinctis nec manifeste quadratis, serierum interstitiis a foveolarum interstitiis transversis multo turbatis. Long., $2\frac{3}{5}$ l.; lat., 1 l.

In this species the discal sculpture of the elytra becomes confused and feeble towards the apex more rapidly than in the other species of the aggregate which I have tabulated as having this sculpture only *gradually* enfeebled,—so that it is somewhat intermediate between that aggregate and the next. Its general characters associate it with *A. eremita* from which it differs in many points (cited in the description), the most definite being perhaps that mentioned in the tabulation,—the seriate foveæ of the elytra commencing considerably behind the base of the elytra. It is a shorter and more depressed species than *A. eremita* and does not seem to vary in colour (I have half a dozen specimens taken in company). The part of the prothorax in front of the anterior transverse sulcus is so strongly rounded separately at its sides that the lateral outline of the prothorax (viewed from above) seems to have a deep emargination a little behind its front extremity. *A. parvulus*, Blackb., is somewhat closely allied to this and the preceding species (*A. eremita*), but is easily distinguished from them by *inter alia* its clypeus considerably narrower in front and strongly emarginate, and by the transverse interstices of its elytral foveæ being so strong and continuous as almost to conceal the existence of the longitudinal interstices.

Victorian Alps.

A. cribratus, sp. nov. Modice elongatus, minus convexus; supra cyaneus, antennis palpis et (tibiis tarsisque posterioribus nigris exceptis) pedibus testaceis; subtus cyaneus vel viridescens; pilis elongatis (his in corpore supra obscuris, in corpore subtus albidis) vestitus; capite confertim æqualiter ruguloso, inter oculos fovea impresso; antennis prothoracem medium parum superantibus, articulis 9° 10° que transversis 11° obovato ad apicem acuto; prothorace quam latiori sublongiori, ut caput punctulato, sat longe pone apicem

arcuatim (et mox ante basin recte) sulcato, pone sulcum anticum longitudinaliter brevissime canaliculato, lateribus ante sulcum anticum et inter sulcos separatim rotundatis; elytris 10-seriatim foveolatis (interstitio inter series 9^{am} et 10^{am} ultra elytra media haud cariniformi), foveolis per elytra tota fere continuis sed apicem versus haud quadratis minus crassis, serierum interstitiis a foveolarum interstitiis transversis turbatis. Long., $3\frac{1}{2}$ l., lat., $1\frac{1}{5}$ l.

This species is closely allied to *A. corallipes*, Chevr., but is certainly a distinct species. In a considerable number of specimens before me the hind tibiæ and tarsi are invariably black, the intermediate tarsi invariably black, and the intermediate tibiæ invariably more or less black. The few specimens I have seen of *corallipes* (from Tasmania) all have entirely red legs. There is also considerable and constant difference in the sculpture of the elytra which in *cribratus* begins close to the base and attains the apex, only becoming finer and less regular near the apex (so that this species has about the strongest apical puncturation of any in the genus); while in *corallipes* the sculpture begins considerably behind the base and changes suddenly at the commencement of the apical third of the elytra into a feeble non-rugulose puncturation.

S. Australia and N.S. Wales.

A. modestus, sp. nov. Angustus, elongatus, modice convexus; supra obscure æneus, antennis palpisque testaceis, subtus obscure cyaneus; pilis elongatis (his in corpore supra obscuris, in corpore subtus albidis) vestitus; capite antice crebre ruguloso, postice minus crebre punctulato, inter oculos fovea impresso; antennis prothoracem medium vix attingentibus, articulis 9° 10° que transversis 11° obovato ad apicem acuto; prothorace vix transverso, inæqualiter (in medio fortius sat crebre, apicem basinque versus subtilius sparsius) punctulato, in medio transversim rugato, sat longe pone apicem arcuatim (et mox ante basin recte) sulcato, pone sulcum anticum longitudinaliter minus breviter canaliculato, lateribus ante sulcum anticum et inter sulcos separatim rotundatis; elytris 10-seriatim foveolatis (interstitio inter series 9^{am} 10^{am} que haud cariniformi), foveolis basin versus obsoletis apicem versus gradatim minus quadratis minus seriatis magis confertis, serierum interstitiis a foveolarum interstitiis transversis turbatis. Long., $3\frac{1}{5}$ l.; lat., 1 l.

Var. (?immat.) pedibus sordide testaceis.

This species is closely allied to *A. eremita*, Blackb. It differs from that insect in colour which is (invariably in all the examples I have seen) dull bronzy above and blackish (tending to cyaneous) beneath, the antennæ and palpi testaceous, the front

tarsi somewhat ferruginous,—*eremita* being a brilliantly coloured and much more nitid insect. In *eremita* the seriate sculpture of the elytra reaches the actual base without any enfeeblement whatever so that there is no indication of the base of the elytra being more nitid than the rest of the surface, while in *modestus* on the basal portion of the elytra the seriate sculpture becomes very faint and sparse, so that that region is conspicuously more nitid than the general surface. In *eremita* the transverse carinæ separating fovea from fovea in the series are stronger than in *modestus* and more elongate (a greater number of them being continuous across several series of foveolæ), causing the elytra to appear very manifestly more coarsely rugulose; and in *eremita* the whole surface of the head is vaguely uneven, while in *modestus* the surface of the head is flat with merely a single fovea-like impression between the eyes.

S. Australia and Victoria.

SCROBIGER.

Chevrolat (Rev. et Mag. de Zool., 1874, p. 34) refers *Opilo mœrens*, Westw., to this genus. His statement does not appear to have been founded on an inspection of the type, and I believe it to be erroneous. According to the size given by its author it is a very much smaller insect than any known *Scrobiger*, and *inter alia* its pronotum is very differently sculptured from that of other species of that genus and its palpi are all subequal. I presume that Chevrolat's reason for regarding *mœrens* as a *Scrobiger* is Westwood's calling its elytra in the front part "rude punctato-striata." This phrase, however, is used by Westwood for elytra (*e.g.*, those of *Cleromorpha*) which are infinitely less coarsely sculptured than those of *Scrobiger*. Westwood's locality for *mœrens* is Adelaide, and I think I am fairly well acquainted with the *Cleridæ* of the Adelaide district. I have seen only one *Clerid* which agrees with Westwood's description, viz., the introduced *Tarsostenus univittatus*, Rossi, and that insect agrees with it very well and occurs near Adelaide. I have no doubt, therefore, that the name *Opilo mœrens* must be regarded as a synonym of *T. univittatus*.

NEOSCROBIGER (gen. nov. *Cleridarum*).

Palporum articulus apicalis securiformis; caput breve; labrum transversum antice emarginatum; antennæ modicæ (prothoracis basin vix superantes), clava sat laxe 3-articulata; oculi modici, supra inter se distantes, subtiliter granulati, transversim subreniformes; prothorax sat elongatus, postice angustum tubuliformis, supra pone apicem transversim sulcatus; elytra sat elongata, quam trans basin lata plus quam duplo longiora, æqualia, in parte apicali fere dimidia

sublævia; pedes sat elongati, femoribus posticis elytrorum apicem plane vel fere attingentibus tarsis 5-articulatis, articulo basali (tarsorum omnium) superne haud manifesto, articulo ultimo robusto præcedenti parum exserto, unguiculis parvis simplicibus divaricatis; corpus modice elongatum, capillis erectis vestitum.

Type *Opilo patricius*, Klug (*sexnotatus*, Westw.).

O. patricius, Klug, cannot be rightly placed in any hitherto characterised genus. Its finely granulated eyes separate it strongly from *Opilo*; its tarsi (all apparently four-jointed,—owing to the basal joint being concealed,—when viewed from above), the securiform apical joint of its maxillary palpi, and its pronotum transversely sulcate near the front, in combination associate it with the *Scrobiger* group of genera. Among those genera its mesosternum not vertical in front, its elytra neither fasciculate nor tuberculate and having a large apical space nitid and almost unpunctured, and its form (the elytra considerably more than twice as long as at the base wide) are sufficient to distinguish it.

Characters such as these appear to me certainly entitled to be treated as generic in the *Cleridæ*, a family in which many structural characters seem to be of less value than they are in most families, *Metabasis* and *Thanasimomorpha*, e.g. (also *Tarsostenus* and *Paratillus*) being so much like each other respectively that it seems strange to separate them widely, and yet having a totally different tarsal structure one from another. No doubt structural differences must have their full weight, and it is out of the question to associate under one generic name species having such, but much study of the Australian *Cleridæ* satisfies me that it is also out of the question to associate under one generic name (at least as far as the Australian *Cleridæ* are concerned) species differing widely in facies and sculpture because one cannot find important differences in the structure of the eyes, palpi, tarsi, &c. *Aulicus*, *Trogodendron*, *Scrobiger*, and the present genus, undoubtedly resemble each other closely in structural characters, but each has so distinctive and constant a facies and type of sculpture that it seems unreasonable to merge any two of them under one generic name. Probably when their life histories and habits are fully known it will be found that each of these genera mimics the facies of the group of insects on which it is parasitic.

N. rauciceps, sp. nov. Sat elongatus, postice sat dilatatus; sat nitidus; æneo-niger, labro antennis palpis tibiis tarsisque rufis, elytris ante medium macula discoidali et ad medium fascia sat lata albidis ornatis (parte apicali rufescenti dense albido pubescenti); capite confertim subgrosse ruguloso,

palporum maxillarium articulo ultimo leviter securiformi, antennis prothoracis basin paullo superantibus; prothorace quam latiori vix longiori, supra antice ut caput (in disco retrorsum gradatim minus crebre) rugulosó, inæquali (antice angulatim mox ante basin recte transversim sulcato, pone sulcum anticum impresso, ante basin 3-tuberculato), lateribus mediis fortiter rotundato dilatatis; elytris a basi ultra medium seriatim sat grosse foveolatis, alibi lævibus. Long., 4 l.; lat., $1\frac{1}{10}$ l.

Much resembling *N.* (*Opilo*) *sexnotatus*, Westw., but with the apical joint of the maxillary palpi so feebly securiform as to suggest generic distinction. Compared with *sexnotatus* the markings on the elytra are whitish instead of yellow, the subapical spot wanting but the whole apex faintly reddish and densely clothed with whitish pubescence; the femora entirely dark; the head and pronotum much more strongly rugulose, the surface of the latter being considerably more uneven behind; the elytra narrower at the base and consequently more dilated near the apex. I do not find any structural difference between this species and *sexnotatus* except that in the maxillary palpi and a trifle less elongation of the hind femora.

Victoria (Dividing Range).

EBURIPHORA.

This generic name must be removed from the Australian Catalogue, as its presence there rests on the authority of Klug's *Opilus patricius* having been referred to *Eburiphora*. This Tasmanian insect is clearly identical with Westwood's *O. sexnotatus* (also from Tasmania,—a species discussed above) and is certainly not an *Eburiphora* (*inter alia* it has not appendiculate claws). As Klug's is the older name the species must be known as *patricia*, Klug.

TARSOSTENUS.

I do not believe that any member of this genus is native to Australia. I have myself taken and recorded the occurrence of *T. univittatus*, Rossi, near Adelaide, but it is no doubt introduced from some other country. The following notes relate to the three really Australian species that have been attributed to the genus.

T. Mastersi, Macl. The description does not read at all like that of an insect very closely resembling *Tarsostenus;* and if Macleay's statement "eyes coarsely granulate" be correct, the word "coarsely" being used in the sense Lacordaire uses it of *Clerid* genera, the species cannot be placed even near *Tarsostenus*.

T. zonatus, Blanch. This species is certainly identical with *Paratillus* (*Clerus*) *carus*, Newm. Newman's name has priority.

T. pulcher, Macl. The description of this insect does not

suggest the idea of a *Tarsostenus;* indeed Macleay himself says that the insect has the appearance of a *Tillus.* I suspect, however, that it is congeneric with the species described below as *Tarsostenodes simulator.*

TARSOSTENODES (gen. nov. *Cleridarum).*

Palporum articulus apicalis securiformis; labrum transversum antice emarginatum; antennæ modicæ (prothoracis basin vix superantes), clava 3-articulata distincta articulis præcedentibus 4 conjunctis longitudine sat æquali; oculi modici, supra inter se sat distantes, fortiter convexi, sat subtiliter granulati, subrotundati, antice emarginati; prothorax elongatus, antice elongato - globulosus postice sub - tubuliformis (*Homæmotæ* prothoracem simulans); elytra longissima angusta apicem versus sat abrupte (nonnihil globulose) dilatata, nec tuberculata nec fasciculata, notulis eburneis, ornata; pedes sat elongati, femoribus posticis elytrorum apicem haud attingentibus, tarsis 5-articulatis, articulo basali (tarsorum omnium) superne haud manifesto; unguiculis subappendiculatis; corpus angustissimum, capillis erectis vestitum.

The insect for which I propose this name mimics in a very remarkable manner Longicorn genera such as *Homæmota* or *Zoedia*, in company with which I found it on flowers. I think it should be placed near *Tarsostenus*, from which *inter alia* the raised ivory-like markings on its elytra readily distinguish it. *Clerus guttulus*, White, is a member of this genus.

T. simulator, sp. nov. Subopacus; læte viridis, labro palpis antennis pedibus scutello et pectore rufo-testaceis, elytris (basi apiceque late viridibus exceptis) rufo-cupreis, his lineis elevatis eburneis binis obliquis ornatis (sc. linea brevi antemediana a margine externo retrorsum, et linea longiori postmediana a margine externo antrorsum, directis); capite pronotoque confertim subtilius rugulosis; elytris a basi ultra medium æqualiter vix lineatim confertim sat grosse (alibi quam pronotnm paullo magis subtiliter) rugulosis. Long., 4 l. (vix); lat., 1 l.

Very different from *T.* (*Olerus*) *guttulus*, White, in its colours and markings; also, *inter alia*, by the notably wider club of its antennæ.

Victoria (Dividing Range).

HYDNOCERA.

This generic name must drop out of the Australian Catalogue, *H. bella*, Westw., having been recently shown by Herr Schenkling (Deutsch. Ent. Zeit, 1898, p. 180) to be a *Lemidia*.

PYLUS.

P. anthicoides, Newm., has been stated by Gorham (Tr. Ent. Soc., Lond., 1878, p. 154) to be an African species,—an assertion that is accepted by Lohde in his recent Catalogue. Newman certainly implies that it is Australian. Probably he was in error as to the place of capture,—or the specimen was an accidentally imported one. I have not seen any Australian *Clerid* agreeing with Newman's description.

TENEBRIONIDÆ.

HYPOCILIBE.

H. veternosa, sp. nov. Late ovata; minus opaca; nigra, antennis apicem versus et tarsis subtus picescentibus; vix perspicue punctulato; clypeo utrinque vix perspicue impresso, antice late manifeste emarginato; prothorace quam longiori ut 16 ad 9 (postice quam antice, ut 8 ad 6) latiori, antice modice emarginato (margine antico in parte mediana late recto), fortiter (a latere viso) convexo, lateribus modice arcuatis postice sinuatis, angulis anticis minus (posticis fortiter) acutis; scutello perlato, utrinque postice late profunde impresso; elytris (a latere visis) valde convexis, leviter reticulatim strigosis, quam prothorax ut 12 ad 8½ latioribus, lateribus rotundatis anguste reflexis, postice alte declivibus; tibiis intus haud tomentosis; coxis anterioribus 4 pubescentibus. Long., 8 l.; lat., 4½ l.

Differs from *H. Macleayi*, Bates, by the elytra without any trace of costæ (even at the suture) and from *H. impunctata*, H. Rutenb., by the very distinct (though faintly impressed) reticulation of the elytra which is due to the presence of numerous wrinkles irregularly traversing the surface. The strongly convex form of the pronotum causing its outline (viewed from the side) to appear very strongly declivous in its hinder one-fourth, the extremely convex elytra (with their greatest height—viewed from the side—considerably behind the middle), the clypeus distinctly emarginate in front, the scutellum deeply excavated on either side in the hinder part, and the densely pubescent anterior 4 coxæ, are characters that in combination distinguish this species from all its described congeners (excluding the two already mentioned,—of which I have not seen examples). It is nearest to *H. heroina*, Blackb., which, however, is a much larger and more nitid insect, with the clypeus rounded in front, the surface of the scutellum even, the reflexed edging of the elytra notably wider, &c., &c.

S. Australia (Basin of Lake Eyre); taken by Herr Koch near Farina.

CURCULIONIDÆ.

ALCIDES.

A. terræreginæ, sp. nov. Sat parallelus; sat cylindricus; castaneus, prothorace antennis tarsis et corpore subtus obscurioribus; pronoto ad latera dense albo-squamoso; elytris maculis quinis albo-squamosis ornatis (sc. 1ª basali lineari longitudinali in interstitio 3° sita, 2ª parva in interstitio 7° hujus ad longitudinis medium sita, 3ª post-mediana in interstitio 3° sita, 4ª quam 3ª vix posteriori in interstitio 7° sita, 5ª subapicali in interstitio 4° sita), corpore subtus plus minusve dense albo-squamoso; rostro modice elongato leviter arcuato; prothorace quam in medio longiori paullo latiori, subquadrato, sat crebre ruguloso; scutello punctiformi; elytris striatis, striis grossissime nec crebre punctulatis, interstitiis sat angustis sat rugulose punctulatis; femoribus subtus dente magno serrato armatis; tibiis arcuatis; segmento ventrali 2° quam 3ᵘˢ paullo longiori. Long. (rostr. excl.) $2\frac{4}{5}$ l.; lat., 1 l.

This little species is very distinct from all its congeners of which I have been able to see the descriptions; from all its described Australian congeners it differs widely, *inter alia*, by the markings of its elytra, which consist of 5 spots on each elytron, one of them being an elongate line on the basal portion of the 3rd interstice and there being no spots on the suture or lateral margins. In shape it closely resembles *A. brevicollis*, Pasc. (as figured in Ann. Mus. Gen., 1885, T.I., fig. 7), but with the prothorax very much less transverse. In one of the examples before me there are traces of a scaly spot near the middle of the base of the pronotum.

Queensland (near Charters Towers).

ANTHRIBIDÆ.

This family is somewhat numerously represented in Australia, though but few of its genera seem to be plentiful in species and but few of its species plentiful in individuals. Its Australian genera (including the new ones I form in the following pages) having more than doubled in number since the issue of Masters' Catalogue in 1886, it seems desirable to furnish a table showing their relation *inter se*. In trying to meet this requirement I have in the main followed the lines of Lacordaire's classification, adopting his principal division based upon the position of the scrobes in which the antennæ are inserted, and also his principal division of the larger group (*Pleurocères*,—having the scrobes lateral) into two aggregates with the transverse carina of the pronotum (*a*) antebasal (*b*) basal. Lacordaire's principal character for dividing the second main group (*Anocères*) does not at present

concern us, since the second aggregate of that group has not been reported as Australian. Beyond this I have not strictly followed Lacordaire, as his principal (so far as concerns the Australian *Anthribidæ*) subdivisions of the two main aggregates of the *Pleurocères*,—based on the width of the rostrum at its base and the more or less cylindric form of the body,—seem to shade off into each other in a somewhat perplexing manner. [Lacordaire, *e.g.*, tabulates the true *Anthribides* as of oblong or oval,—contrasted with cylindric,—form, but in the detailed diagnoses of their genera calls some of them "almost cylindric," "subcylindric," and even unreservedly "cylindric."] I have adopted in the place of those characters others which Lacordaire treats as subordinate to them, founded on (*a*) the relation between the upper and lower edge of the rostral scrobe, in the one case the lower edge protruding outwards further than the upper edge or the upper edge cutting into the lateral margin of the rostrum, so that the scrobe is visible from above; in the other case the upper edge not cutting into the lateral margin of the rostrum and the lower edge not protruding outwards beyond the upper, and the scrobe consequently being entirely invisible from above (*b*) the form of the eye.

Of the *Anthribid* genera known as Australian I have been able to include in the following tabulation all except *Telala*,—which is a genus characterised by Mr. Jordan (Ent. Z. Stett, 1895, p. 143). I do not think that it is represented among the *Anthribidæ* before me, and as its author does not say whether the rostral scrobes are visible from above I cannot place it in my tabulation without seeing it. It is founded on a species of moderately large size, with spinose elytra.

Tabulation of the *Anthribid* genera known to be Australian:—

A. Antennæ inserted on the side of the rostrum.
  B. A transverse carina (independent of the base) on the pronotum.
    C. Prosternum and mesosternum elevated and contiguous ... ... Bythoprotus.
    CC. Prosternum and mesosternum not as in *Bythoprotus*.
      D. Rostral scrobes visible from above, and not basal vertical and sulciform.
        E. Eyes small and very elongate.
          F. Carina of pronotum strongly arched ... Ancylotropis.
          FF. Carina of pronotum straight ... ... Genethila.
        EE. Eyes not as in the preceding two genera.
          F. Eyes approximate on the forehead ... Litocerus.
          FF. Eyes lateral, and distant from one another.
            G. Carina of pronotum straight ... ... Ethneca.
            GG. Carina of pronotum strongly arched ... Commista.
      DD. Rostral scrobes not visible from above unless they are basal vertical and sulciform.
        E. Eyes entire or nearly so.

F. Rostral scrobes slightly visible from above, basal, vertical, and sulciform.
G. Club of antennæ 4-jointed ... ... Eucorynus.
GG. Club of antennæ 3-jointed ... .. Ecelonerus.
FF. Rostral scrobes quite invisible from above.
G. Rostral scrobes distinctly sulciform.
H. The rostrum forms a perfectly even surface with the head ... ... Entromus.
HH. The rostrum is on a different plane from the head ... ... Epargemus.
GG. Rostral scrobes foveiform.
H. Metasternum not extremely short.
I. Antennæ notably shorter than head and prothorax.
J. Joint 9 of antennæ scarcely wider than 8 ... ... Enspondus.
JJ. Joint 9 of antennæ as wide as joint 10.
K. Antennal club compact ... Tropideres.
KK. Antennal club loosely articulate ... ... Apatenia.
II. Antennæ considerably longer than head and prothorax ... ... Cacephatus.
HH. Metasternum extremely short ... Xynotropis.
EE. Eyes strongly emarginate ... ... Xenocerus.
BB. The transverse carina of the pronotum coincides with the base (at any rate in the middle).
C. Rostral scrobes strongly sulciform; antennæ notably shorter than head and prothorax ... Basitropis.
CC. Rostral scrobes and antennæ not as in *Basitropis*.
D. Front coxæ widely separated from one another.
E. Rostrum emarginate at apex and not forming an even surface with the head ... ... Phlœobius,
EE. Rostrum truncate at apex and forming an even surface with the head ... ... Streneoderma.
DD. Front coxæ subcontiguous or very narrowly separated.
E. Antennæ not reaching the base of the prothorax, and more or less stout.
F. Rostral scrobes visible from above ... Ozotomerus.
FF. Rostral scrobes not visible from above ... Cratoparis.
EE. Antennæ reaching much beyond base of prothorax (at any rate in male) and extremely slender.
F. Joint 3 of antennæ at least twice as long as 1 and 2 together.
G. Basal joint of hind tarsi notably longer than 2 and 3 together ... ... Exillis.
GG. Basal joint of hind tarsi about equal to 2 and 3 together... ... ... Euciodes.
FF. Joint 3 of antennæ about equal to 1 and 2 together ... ... Notæcia.
AA. Antennæ inserted on the upper surface of the rostrum.
B. Eyes rounded or widely oval, somewhat finely granulate.
C. Apex of front tibiæ with a strong spine perpendicular to the axis of the tibia ... ... Aræocorynus.
CC. Apex of front tibiæ normal.

D. Eyes very large and prominent. Antennæ equal in length to two-thirds of body ... Misthosima.
DD. Eyes much smaller and less convex. Antennæ half as long as body.
E. Front tarsi very long and wide ... ... Doticus.
EE. Front tarsi much shorter and narrower ... Aræocerus.
BB. Eyes narrow and elongate, coarsely granulate ... Aræocerodes.

EUCORYNUS.

The following species seems to belong to this genus, which has not as yet been recorded as Australian. The presence of an ante-basal carina on its pronotum together with the width of its rostrum (not narrower at its base than the head) and the sulciform character of its antennal scrobes refer it to M. Lacordaire's "groupe" *Ecelonerides*. In that "groupe" the four-jointed club of its antennæ refers it to *Eucorynus*, and I do not find anything in M. Lacordaire's diagnosis of the genus inconsistent with the characters of the insect described below, except in the antennæ of the insect being somewhat shorter than they should be according to the diagnosis.

E. Mastersi, sp. nov. Cylindricus; nigro-piceus, antennis (clava excepta) tarsisque rufis; pube picea vestitus, hac pube alba et setulis erectis piceis et aliis albis maculatim variegata; capite rostroque crebre subgrosse æqualiter punctulatis; pronoto leviter transverso, ut caput punctulato, antice fortiter angustato, lateribus sat arcuatis; elytris leviter striatis, striis fortiter nec crebre punctulatis, interstitiis planis vix perspicue punctulatis; antennis robustis prothoracis basin attingentibus, articulis 1° 2° que quam 3us paullo brevioribus, 4° 3° sat æquali, 5°—7° paullo brevioribus, 8°—11° clavam compactam depressam (hac quam articuli 4us—7us conjuncti paullo breviori) formantibus. Long., 4 l.; lat., 1$\frac{3}{5}$ l.

The erect setæ are fine and recurved and are piceous or white according to the colour of the depressed pubescence among which they are situated. The white spots are,—about 5 moderately large on the head, a considerable number (all small) on the pronotum, a considerable number (all small except a larger one on the shoulder) on the front half of the elytra, and a large one and a number of small ones on the apical one-third of the elytra. The tibiæ and abdomen are prettily variegated with piceous and white pubescence, and there is much scattered white pubescence on the rostrum. The two examples before me are probably females, which may account for their antennæ being shorter than in the specimens of *Eucorynus* examined by Lacordaire, which he believed to be males.

Queensland; sent to me by Mr. Masters and Mr. Cowley.

ENTROMUS (gen. nov. *Anthribidarum*).

Caput transversum; rostrum planum depressum, quam latius sublongius, antice emarginatum, ad basin quam caput haud angustius, scrobibus obtectis foveiformibus sed oblique retrorsum (ut sulci male definiti) productis; antennæ graciles, prothoracem medium paullo superantes, articulis basalibus 2 paullo incrassatis (2° quam 1ᵘˢ multo longiori), 3° 2° longitudine æquali, 3°—8° gradatim brevioribus, 9°—11° clavam oblongam formantibus, 9° obconico vix transverso, 10° brevi sat transverso, 11° leviter transversim obovato; oculi parvi integri sat subtiliter granulati; prothorax vix transversus, vix inæqualis (basin versus transversim rugatus), sat convexus, antice minus fortiter angustatus, carina antebasali male definita cum rugis transversis adjacentibus subconfusa, in prothoracis lateribus vix perspicue producta; scutellum sat parvum; elytra lata depressa, inæqualia, leviter striata, striis punctulatis; coxæ anticæ appoximatæ inter se; pedes modici, inter se sat æquales; tarsi breves, articulo basali quam 2ᵘˢ parum longiori, 3° in 2° inserto; unguiculi subtus dente armati; metasternum modicum; pygidium (exempli typici) elytris tectum; corpus pubescens.

This genus is difficult to place in Lacordaire's scheme of classification, although it seems to me unnatural to place it far from *Tropideres*. But according to Lacordaire the fact of its rostral scrobes being certainly not simply foveiform would remove it from the "groupe" "*Tropiderides*." These are almost exactly as in *Ecelonerus* in outline, but differ in commencing in a foveiform excavation, the wall of which is interrupted at its postero-interior portion from which a shallow somewhat ill-defined sulcus emerges and simulates the deep strongly defined sulcus of *Ecelonerus*. The short wide depressed form of the type of this genus removes it, however, according to M. Lacordaire, from the *Eceloncrides*. The structure of the basal part of the pronotum is unlike that of any other Australian *Anthribid* known to me, the ante-basal carina appearing merely as one (a little more conspicuous than the rest) of several fine transverse ridges, and (though very distinct and well-defined near the lateral margins of the pronotum) becoming very faint as it approaches the middle line of the pronotum. From *Tropideres* itself it differs, *inter alia*, by the greatly elongated 2nd joint of its antennæ. I believe the specimen before me to be a male, but am not sure. *Tropideres musivus*, Er., and *albuginosus*, Er., are probably congeneric with this insect, but the descriptions of those species seem to indicate a different arrangement of the inequalities of the elytra, &c.

E. dorsoplagiatus, sp. nov. Piceus, pube picea albaque variegatus; hac rostrum scutellum que dense vestienti et in elytris maculam magnam quadratam communem formanti; antennis pedibusque rufis, his pube picea et alba variegatis; rostro longitudinaliter 3-carinato; prothorace inæqualiter rugulosopunctulato, dorso obsolete inæquali; elytrorum interstitiis 3° 5° que carinatis, parte posticali subverticali, interstitiis 3° 5° que mox ante declivitatem posticam valde callosis, inter hæc interstitio 4° rufo, interstitiis alternis (parte maculam dorsalem albam ferenti excepta) tuberculis parvis nigris instructis; macula dorsali alba maculis parvis nigris perpaucis interrupta et ad latera crenulata. Long., $3\frac{1}{2}$ l.; lat., $1\frac{1}{2}$ l.

The common white spot on the elytra is so densely pubescent that the underlying sculpture is entirely concealed. The spot occupies in its front all the width between the seventh interstices of the two elytra but narrows a little to its apex where it occupies the width between the two fifth interstices. Its front margin is a little behind the base of the elytra but in its middle runs forward triangularly to the scutellum; its sides are somewhat zigzagged, being cut into most conspicuously by a black spot a little behind the middle; its apex (a little in front of the hind declivity) is arcuately and irregularly emarginate and its surface is interrupted by a few very small black spots. The red pubescence near the apex of the elytra is not entirely confined to the fourth interstices but appears as spots on some of the other interstices, and there is also a little white pubescence near the apex. The third and fifth interstices of the elytra are a little more strongly elevated near the base than in the middle of their length. It is (as already noted) very probable that *Tropideres musivus*, Er., and *albuginosus*, Er., are congeneric with this insect. Assuming them to be so this insect differs from them specifically,—from *musivus*, *inter alia*, by its considerably larger size, by its not having three fascicles of pubescence on its prothorax and by the proportions of its antennal joints,—from *albuginosus*, *inter alia multa*, by its antennæ not long enough to reach the base of the prothorax.

Victoria; sent to me by Mr. Kershaw.

EPARGEMUS (gen nov. *Anthribidarum*).

Caput transversum; rostrum planum, depressum, quam latius vix longius, cum capite nullo modo continuum, mox ante basin angustatum (et hic quam inter oculos caput subangustius), hinc antrorsum ad apicem gradatim dilatatum, antice truncatum, scrobibus obtectis foveiformibus sed oblique retrorsum (ut sulci male definiti) productis; antennæ sat robustæ, prothoracem medium vix superantes, articulis

basalibus 2 leviter incrassatis (2° quam basalis vix breviori), 3° quam 2us manifeste longiori, 3°—8° gradatim brevioribus, 9°—11° clavam oblongam formantibus, 9° vix transverso, 10° brevi transverso, 11° vix transverso quam 9us vix breviori; oculi sat magni, integri, sat subtiliter granulati; prothorax transversus, vix inæqualis, sat convexus, antice et postice fortiter angustatus (margine antico quam basis sat angustiori), carina antebasali bene definita retrorsum in medio angulata in prothoracis lateribus vix perspicue producta; scutellum parvum; elytra convexa, inæqualia, leviter striata, striis subtiliter sat crebre punctulatis; coxæ anticæ inter se manifeste separatæ; pedes modici, inter se sat æquales; tarsi modici, articulo basali quam 2us sat longiori, 3° in 2° inserto; unguiculi subtus dente parvo armati; metasternum minus breve (quam segmentum ventrale basale vix longius); pygidium manifestum; corpus pubescens.

This genus is difficult to place in Lacordaire's arrangement. Its rostral scrobes are much like those of *E. dersoplagiatus*, being of oblong form and running hindward obliquely on the under surface of the head, but scarcely long and deep enough to be called unreservedly "sulciform." It is difficult to say whether Lacordaire would have placed it in the groups having the base of the rostrum narrower than the head, the rostrum being scarcely (but nevertheless a little) narrower a little *in front* of the base than the head between the eyes. To me it appears that it ought not to stand far from *Tropideres*, although a strict application of Lacordaire's tabulation-characters would place it in the "*Phlœophilides*," but in the diagnosis of that "groupe" "scrobes découvertes" is one of the characters, which they certainly are not in this genus—nor does the species before me agree in its general characters or facies with any genus known to me of that group. I believe the specimen on which I have founded this genus to be a male.

E. marmoratus, sp. nov. Picea, pube nigricanti ochrea et alba variegata, antennis (clava excepta) et pedibus (plus minusve) rufescentibus; capite rostroque (his haud continue planis) crebre rugulose punctulatis, rostro longitudinaliter obsolete carinato; prothorace quam longiori fere ut 4 ad 3 latiori, supra longitudinaliter sat dense rugato, lateribus ab apice longe ultra medium arcuatim divergentibus hinc ad basin fortiter convergentibus,—elytris inter humeros et scutellum (et in humeris) callosis, interstitiis alternis leviter convexis et tuberculis nonnullis parvis instructis; corpore subtus sat æqualiter albido-pubescenti; pedibus maculatim albo- et piceo-pubescentibus.

Var pubis pallidæ colore brunneo-testaceo. Long., $2\frac{3}{8}$ l.; lat., 1 l.

In a fresh specimen the sculpture of the derm is almost entirely concealed by the pubescence, even the callosities near the base of the elytra being scarcely discernible; these are not strongly marked even in an abraded example; that between the scutellum and the shoulder is the larger, and appears feebly bifid from some points of view. The pattern formed by pubescence of different colours is extremely intricate and difficult to describe. The rostrum is entirely clothed with pale pubescence; on the head dark, pale, and ochreous pubescence are vaguely intermingled; on the pronotum the middle of the disc and base is dark with a few pale spots, the front and sides being mostly pale with some dark patches; the pubescence of the front two-thirds of the elytra is dark, irrorated with pale hairs, which are condensed (interruptedly) along some of the alternate interstices and in small spots near the sides; the apical one-third of the elytra is occupied by a large common patch (which however does not reach the margins) of pale pubescence, close to the lateral margins of which (and about their middle) is a conspicuous dark spot, while another conspicuous dark spot occupies the sutural apical space on each elytron. The small indistinct tubercles on the alternate interstices are clothed, some with ochreous, some with very dark, pubescence. In an absolutely unabraded specimen the front part of the fifth interstice appears more strongly elevated than the other interstices, but this seems to be due to longer and closer pubescence, as I do not find it in abraded specimens. The greatest dilatation of the sides of the prothorax is at the extremities of the ante-basal carina, from which point the sides converge both forward and hindward.

Victoria and N.S. Wales (specimens in the S.A. Museum are without indication of habitat, but are probably from S.A.).

ENSPONDUS (gen. nov. *Anthribidarum*).

Caput transversum; rostrum depressum planum, cum capite haud continuum, breve, transversum, quam caput haud angustius, scrobibus lateralibus, magnis, foveiformibus, obtectis; antennæ modicæ, prothoracem medium paullo superantes, articulis basalibus 2 quam sequentes robustioribus (2° quam 1us paullo longiori), 2°—5° longitudine sat æqualibus, 6°—8° paullo brevioribus, 9° quam 8us paullo longiori sed parum latiori, 10° 11° que clavam formantibus quam 9us duplo latioribus, 10° vix 11° haud transversis, 11° obconico; oculi modici integri, sat subtiliter granulati, inter se late separati; prothorax vix transversus, valde inæqualis, sat convexus, antice fortiter angustatus, carina antebasali basi sat approximata bene definita leviter antrorsum arcuata in prothoracis lateribus fere ad medium producta; scutellum parvum; elytra convexa, inæqualia, striata; coxæ anticæ

subcontiguæ; pedes modici, inter se sat æquales; tarsi sat elongati, articulo basali quam 2us sat longiori, 3° in 2° inserto; unguiculi subtus dente parvo armati; metasternum modicum (quam segmentum ventrale basale paullo longius); pygidium manifestum; corpus pubescens.

The insect for which I propose this generic name cannot be referred to any existing genus that I can discover. In Lacordaire's classification its place is in the "Groupe" *Tropiderides.* In his tabulation of the genera of that groupe its place is doubtful, the ante-basal carina of its pronotum having its convexity forward, but not nearly so strongly as in the genera he places in the aggregate distinguished by that character. Among them the tabulation would make it *Hypseus* (though its eyes are scarcely "very finely" granulate)—but *Hypseus* has very different antennæ, and eyes converging on the forehead. If the forward arch of the carina be regarded as too slight to place the insect in the *Hypseus* aggregate, Lacordaire's tabulation would make it doubtfully an *Apatenia,*—but that genus has eyes and antennæ like those of *Hypseus,—inter alia* joints 9 and 10 of the antennæ being equal to each other. The most striking character of the insect before me consists in there being only two joints in the club of its antennæ, joint 9 evidently belonging to the funiculus and being not much longer and wider than the eighth joint. Judging by the ventral segments (less convex and not overlapping the edge of the pygidium in one,—more convex and just covering the edge of the pygidium in another) I think I have both sexes before me, and if so there is little or no superficial sexual difference.

E. bigibbosus, sp. nov. Oblongus; piceus pube cinerea ochrea brunneaque variegata, antennis (clava excepta) pedibusque (his fusco-variegatis) rufescentibus; capite rostro pronotoque crebre subtilius rugulosis; hoc in disco paullo pone medium tuberculis 2 magnis fasciculatis ornato; elytris confertim subtilissime subaspere punctulatis, subtiliter punctulato-striatis, interstitiis alternis quam cetera vix magis elevatis (3° pone basin et in medio, 5° ante apicem, tuberculis singulis fasciculatis ornatis) et fasciculis parvis pilosis variegatis. Long., 2 l.; lat., $\frac{4}{5}$ l.

This insect is easily recognisable by the presence, on either side of the middle line of the pronotum, of a large tubercle bearing a fasciculus of hairs. There is a smaller fasciculated tubercle near the base and another about the middle of the 3rd elytral interstice, and also another near the apex of the 5th interstice. There are also very small fascicles (beneath which the derm is scarcely tuberculate) on the alternate interstices, most conspicuous on the subsutural interstice and becoming gradually less

so towards the lateral margins. The surface of a specimen in good condition is of an ashy colour, being densely clothed with brownish and whitish hairs very evenly intermingled. On this ashy ground the tubercles and fascicles show as dark spots, their vestiture being fuscous with an intermixture of ochreous. The whitish pubescence somewhat predominates along the central line of the pronotum, and in the form of a wide, very indistinct fascia, a short distance behind the base of the elytra. The pubescence so closely and thickly clothes the surface that its sculpture is entirely invisible, excepting the two large tubercles on the pronotum and the three smaller ones on each elytron. The scutellum is white. The tubercles are a little larger in some examples than in others.

S. Australia.

TROPIDERES (?)

It is with great hesitation that I refer to *Tropideres*, the minute *Anthribid* described below. Nevertheless, it seems to lack any character that would definitely exclude it from the heterogeneous aggregate of species which the genus, as characterised by M. Lacordaire, is made to contain, at any rate, unless the fact of the 2nd joint of its antennæ being much longer than the basal joint be in itself deemed sufficient. The following are its structural characters:—Head wide, rostrum scarcely transverse, at its base as wide as the head, scarcely emarginate in front, its sides parallel, its scrobes lateral foveiform and concealed, its plane not evenly continuous with that of the head; antennæ not long enough to reach the base of the prothorax, joint 1 short, joint 2 very evidently longer than 1, 3 a little longer and more slender than 2, joints 3-8 gradually shorter, 9-11 forming an oblong but compact club, 9 longer than 10, which is transverse; eyes fairly large and prominent, finely granulated and widely separated from each other; prothorax gently transverse, narrowed from base to front, but not strongly, its surface even, its antebasal carina arched with convexity hindward (very close to the base but distinct from it in the middle, forming a right angle with its lateral extension which is not strongly defined and does not very nearly reach the middle of the lateral margin); elytra slightly gibbous close to the base on the disc, but otherwise even or nearly so, obscurely punctulate striate; front coxæ almost contiguous to each other; legs somewhat short and of nearly equal length; tarsi moderately long, their basal joint considerably longer than the second; body convex, gently oblong-ovate, pubescent; metasternum on the middle line about as long as the basal ventral segment.

T. evanescens, sp. nov. Piceus, antennis (clava excepta) pedibusque rufescentibus; pube sat elongata albida disperse

vestitus; supra crebre minus subtiliter (in prothorace paullo magis subtiliter) aspere punctulatus; elytris indistincte punctulato-striatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l. (vix).

I have described the characters of this insect (above) in discussing its generic position fully, and need not repeat them here. I do not think my example is abraded. Its upper surface is thinly clothed with rather long adpressed fine whitish hairs which are slightly condensed into two very indistinct fasciœ on the elytra, in front of and behind the middle. On the undersurface the pubescence is more even and slightly closer.

S. Australia; Eyre's Peninsula.

CACEPHATUS (gen. nov. *Anthribidarum*).

Caput sat breve; rostrum transversum, sat planum, cum capite haud continuum, ad apicem truncatum, ad basin quam caput haud angustius, scrobibus lateralibus magnis foveiformibus obtectis; antennæ corpus medium attingentes, robustæ, articulis basalibus 2 leviter incrassatis (2° quam 1us sublongiori), 3°—8° elongatis inter se subæqualibus, 9°—11° clavam laxam formantibus, 9° quam lato sat longiori, 10° quam 9us vix latiori sed brevi leviter transverso, 11° ovali; oculi magni integri subtilius granulati, antrorsum in fronte sat fortiter convergentes; prothorax leviter transversus, antrorsum fere a basi angustatus, æqualis, carina antebasali basi sat approximata bene definita retrorsum arcuata ad latera angulata (nullo modo acute) et antrorsum fere ad latera media producta; scutellum parvum; elytra sat convexa, late subcylindrica, sat æqualia, punctulato-striata; coxæ anticæ inter se anguste separatæ; pedes sat elongati (præsertim antici); tarsi sat elongati, articulo basali quam 2us multo longiori, 3° in 2° inserto; unguiculi subtus dente basali armati; metasternum modicum (quam segmentum ventrale basale parum longius); pygidium manifestum; corpus pubescens.

The insect for which I propose this name is evidently a member of Lacordaire's "Groupe" "*Tropiderides*," and in his tabulation of the genera it evidently stands with *Apatenia*, from which its long antennæ having their tenth joint transverse and very much shorter than the ninth, *inter alia*, distinguish it.

C. sericeus, sp. nov. Brunneus, pube albido-sericea vestitus; supra confertim subtiliter subaspere punctulatus; elytris ad basin singulatim leviter gibbis, minus fortiter striatis, striis subtilius sat crebre punctulatis, interstitiis vix subconvexis, sculptura postice obsoleta. Long., $2\frac{1}{2}$ l.; lat., 1 l.

The characters cited in the generic diagnosis need not be repeated here. There are three examples before me, all of which

appear to be somewhat abraded. It is manifest however that the whitish pubescence clothes the head and pronotum somewhat evenly. On the elytra the pubescence is interrupted by small patches of darker colour showing (in the examples before me) the derm, but I suspect that in a fresh specimen the dark spots are clothed with pubescence of the colour of the derm,—as I find some indication of such pubescence on some of the spots.

XYNOTROPIS (gen. nov. *Anthribidarum*).

Caput transversum planum; rostrum transversum planum cum capite omnino continuum, ad basin quam caput haud angustius, scrobibus foveiformibus obtectis; antennæ sat graciles, prothoracis basin attingentes, articulis basalibus 2 quam sequentes paullo robustiores (2° longiori), 2° 3° que inter se longitudine æqualibus, 5°—5° gradatim brevioribus, 6°—8° moniliformibus, 9°—11° clavam sat compactam formantibus, 9° 10° que inter se sat æqualibus fortiter transversis, 11° subgloboso; oculi modici, fortiter convexi, sat fortiter granulati; prothorax transversus sat æqualis, fortiter convexum, antice super caput fortiter anguste prominens, carina ante-basali bene definita arcuata retrorsum convexa in lateribus vix perspicue producta; scutellum parvum; elytra fortiter convexa, æqualia, sat breviter ovalia, punctulato-striata; coxæ anticæ inter se bene separatæ; pedes modici, inter se sat æquales; tarsi breves articulo basali (tarsorum anticorum vix, posticorum manifeste) quam 2us longiori, 3° in 2° inserto; unguiculi subtus dente acuto armati; metasteruum brevissimum; pygidium manifestum sat latum; corpus supra obscure metallicum, pilis elongatis adpressis maculatim ornatum.

The shape of the insect for which I found this genus (with its strongly convex oval elytra, somewhat suggesting the thought of *Otiorhynchus*) together with the metallic gloss of its surface, renders it very easy of identification. In Lacordaire's classification it falls into the "Groupe" *Tropiderides* by virtue of the following characters:—Antennæ inserted in the sides of the rostrum, ante-basal carina of pronotum present, rostrum short flat, and at base not narrower than the head, rostral scrobes foveiform, eyes entire, sides of rostrum sub-parallel. Its structural characters seem to place it near *Tropideres*, from which it differs by, *inter alia*, its general build and extremely short metasternum which is not longer on its middle line than the shortest of the ventral segments. The metasternum is moderately short in *Tropideres*, but not nearly so short as in this genus.

X. micans, sp. nov. Ovalis; sat nitida; supra picea, obscure aureo- et cupreo-micans; maculatim albido-pubescens;

subtus nigra, vix aurata, vix pubescens; antennis (clava excepta) pedibusque (femorum basi excepta) rufis; capite pronotoque confertim aspere punctulatis; elytris vix striatis, grossissime seriatim punctulatis; sternis fere ut pronotum, abdomine subtiliter, punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l.

The metallic glow on this species—though quite unmistakeable—is by no means brilliant; it is of an evidently coppery tone on the front part of the pronotum, but very little noticeable on the rest of that segment, and on the elytra is brassy. On the example before me (which I took myself and am confident is not materially injured by abrasion) the whitish pubescence is thinly and vaguely dispersed on the head and pronotum with very little tendency to be condensed anywhere, while it clothes the scutellum densely, and on the elytra forms a wide ill-defined lateral margin and some not very conspicuous dorsal blotches which range themselves somewhat in the form of two very arcuately transverse rows (their convexity directed forward), one behind the other in front of the middle.

Tasmania; Lake district.

BASITROPIS.

The Australian species of this genus appear to be entirely Northern in distribution and rare (as regards individual specimens) but probably numerous. I have before me six specimens which represent at least four and possibly six species. In five of them the markings of the upper surface are extremely similar while in one they are entirely different from those of the five. Three species have been described from Australia. In one of them (*solitarius*, Pasc.) the alternate interstices of the elytra are said to be "raised," which is not the case in any of the specimens before me. The descriptions of the other two are so meagre as to be almost useless. However one of my specimens agrees with the description (such as it is) of *B. ingrata*, Pasc., and may possibly be that insect,—but I cannot regard any of them as reconcilable with the description of *B. peregrina*, Pasc., which is represented as having "an obscure yellowish-grey band near the apex," consisting of pubescence, and being long., 3 l. The specimens before me (except that already mentioned as *B. ingrata ?*) are all decidedly larger and have *two* bands of pale-coloured pubescence neither of which is at all "obscure." I must consider therefore that I have not seen *B. peregrina* or *B. solitaria*.

In respect of its generic characters the diagnoses of *Basitropis* are very incomplete, owing to the want of detail as to sexual characters. Jekel (the author of the genus) does not refer to them, but his description and figure do not altogether agree with

Lacordaire's statement. The former says that the antennal club consists of three joints while the latter somewhat inconsistently states (in the generalities of the "Groupe") that in the male the club consists of four or five joints, and then in the formal diagnosis affirms that joints 6-8 are grudually transverse and that joints 9-11 form the club; and that the females can hardly be distinguished from the males except by their shorter antennæ. Turning to the specimens before me I find a slight difference in the structure of the ventral segments between two of them and the other four,—the two having those segments distincly though slightly depressed down the middle line and the apical ventral segment so related to the pygidium that when the ventral segments are looked at from directly above (the specimen being laid on its back) the edge of the pygidium can be seen beyond it, while the ventral segments of the other four are evenly convex and the apex of the apical segment just covers and conceals from sight the edge of the pygidium. The two specimens have antennæ in which joints 6 8 are so strongly and gradually dilated that it is difficult to say at which joint the club really begins (which might account for Lacordaire's contradictory statements),—while the antennæ of the other four have a distinctly three-jointed club and are I think females,—the two being males. I take it that Jekel founded the genus on the female, and that Lacordaire diagnosed a male and either failed to observe the antennæ of the female correctly, or regarded as male and female specimens that were really the males of two species.

The genus is a very well marked one among the Australian *Anthribidæ* by the unusual character of the antennal scrobes being basal and sulciform, in conjunction with the ante-basal carina of the pronotum wanting and the lateral carinæ continued nearly to the apex where they do not form an angle. I observe in all the specimens before me that the carinæ of the pronotum are finely and closely denticulate in their entire length but as this character is not referred to by Jekel or Lacordaire it may not be present in *B. nitidicutis*, Jekel (from India and Java), the typical species.

It is to be noted that M. Lacordaire describes under the name *Gynandrocerus* an African genus which he says differs from *Basitropis* only by the sexual antennal characters which approach those I have described above. If there is really no other difference between the two genera *Gynandrocerus* cannot stand.

B. relicta, sp. nov. Mas. Cylindrica; picea, pube densissima nigro-picea vestita, hac pube pallida partim testacea partim alba variegata; capite subgrosse sat crebre æqualiter punctulato; rostro fortiter transverso, inæquali, postice longitudinaliter obsolete canaliculato, antice arcuatim

emarginato; antennis robustis prothoracem medium paullo superantibus, articulis basali crasso superne nullo modo visibili, 2° quam basalis breviori minus crasso quam latiori vix longiori, 3° 4° que inter se sat æqualibus quam 2us sat longioribus, 5° quam 4us paullo breviori ad apicem dilatato quam latiori parum longiori, 6° intus ad apicem dilatato transverso quam 5us paullo breviori, 7° intus etiam magis dilatato quam longiori duplo latiori quam 6us vix breviori, 8° 7° similis sed paullo magis transverso, 9° 10° que inter se æquilatis (hoc paullo breviori) quam 8us parum latioribus, 11° breviter transversim subovato; oculis in fronte modice inter se approximatis; prothorace vix transverso, æquali, subgrosse minus profunde nonnihil acervatim punctulato, lateribus a basi longe ultra medium sat parallelis dein convergentibus; elytris striatis, striis fortiter nec crebre punctulatis, interstitiis planis; coxis anticis subcontiguis. Long., 4½ l.; lat., 1⅗ l.

The markings of the surface are caused by patches of pubescence different in colour from the ground. On the upper surface the pubescence forming the ground is of a smoky blackish tone; on the head and prothorax there are numerous small spots of testaceous brown; the scutellum is covered with white pubescence; on the elytra spots (very various in size) of white pubescence form two zones—one post-basal, the other ante-apical. The post-basal zone is an irregular common festoon of unequal spots with its ends on the shoulders; the ante-basal zone is on each elytron a transverse spot of irregularly triangular form—its base near but not touching the suture, its apex (which is truncate) near but not touching the lateral margin. Besides the two zones there are a few small white pubescent spots about the lateral margin and apex The undersurface and legs are densely clothed with pale grey very fine pubescence. On this ground coarse puncturation appears as dark spots on the sterna, there is an elongate spot of ochreous pubescence on the lateral margins of each ventral segment, and the legs are variegated with dark pubescence. Joints 9 and 10 of the antennæ are scarcely narrower than the interval between the eyes.

A specimen from N. Queensland may be the female of this species. Its antennæ are a trifle shorter than those of the described male and distinctly more slender, their basal 7 joints cylindric and not differing much in size except in the 4th being somewhat the longest, the 8th is distinctly dilated and transverse, joints 9—11 forming a club, and much like joints 9—11 of the male, but less dilated. The only differences that I observe (not already mentioned) from the male consist in the eyes being a little less approximate to each other, and the elytra having

(besides the zones of white pubescence) numerous small white pubescent spots sprinkled over the whole surface. On the whole I incline to think this specimen the female of a species distinct from that of which the male is described above.

An example from Port Darwin agrees with the above description of the male except in its smaller size (Long. $3\frac{3}{4}$ l.), and in the pale pubescence of its elytra being of a distinctly ochreous tone.

N. Queensland.

B. pallida, sp. nov. Fem. Sat cylindrica, postice paullo angustata; picea, pedibus antennisque rufescentibus; pube adpressa densissima testacea alba et fusca læte intermixta vestita; capite subgrosse sat crebre æqualiter punctulato; rostro sat fortiter transverso, longitudinaliter indistincte carinato, antice leviter emarginato; antennis minus robustis prothoracem medium paullo superantibus, articulis basali crasso superne nullo modo visibili, 2°—4° inter se sat æqualibus quam basalis longioribus, 5°—7° inter se sat æqualibus quam 4us sat brevioribus, 8° quam 7us paullo longiori antrorsum leviter dilatato, 9°—11° clavam formantibus, 9° 11° que inter se sat æqualibus vix transversis, 10° brevi fortiter transverso; oculis in fronte minus approximatis; prothorace sat æquali (longitudine latitudini æquali), fere ut caput punctulato, lateribus a basi longe ultra medium leviter (dein sat fortiter sinuatim) convergentibus; elytris leviter striatis, striis fortiter sat crebre punctulatis; corpore subtus pedibusque sat æqualiter dense albido-pubescentibus; coxis anticis inter se approximatis sed haud contiguis. Long., $4\frac{1}{2}$ l.; lat., $1\frac{1}{2}$ l.

The prevailing pubescence of the upper surface is of a pale testaceous brown colour; on this ground, white pubescence is distributed as follows,—dispersedly on the head and rostrum,—on the pronotum a line down the middle and an elongate patch on either side near the margins,—on the elytra a large humeral patch limited by an oblique line from the scutellum to the lateral margins at about a third of its length from the base, some small spots along the suture and lateral margins, and a large somewhat arcuate patch near the apex; pubescence of very dark colour forms the lateral margins of the pronotum and is continued a short distance along the margins of the elytra, forms a large basal spot in the basal white patch, a very small spot on the third interstice slightly behind the middle (just in front of the hindmost white patch) and a larger spot on the third interstice near the apex (within the arch of the hindmost white patch).

The colour and distribution of the markings in this species are entirely different from those of the other described species of

Basitropis (at any rate of all the Australian ones, and all other known to me). In respect of other characters not likely to be sexual it differs from *B. relicta, inter alia,* by its somewhat larger and less cylindric shape, the feeble emargination of the front of its rostrum, the more elongate form of its prothorax which is distinctly (though not much) narrower across its middle than across its base (in *relicta* that segment is if anything wider across its middle than its base), its evidently narrower rostrum, and the more evident interval between its front coxæ. It is to be noted, however, that in neither of the above species are the front coxæ separated by a continuous process of the prosternum.

Port Darwin (N. Territory of S. Australia). Taken by the late Dr. Bovill.

STRENEODERMA (gen. nov. *Anthribidarum*).

Caput transversum; rostrum transversum supra sat planum, ad apicem truncatum, ad basin quam caput haud angustius, scrobibus foveiformibus obtectis; submentum planatum profunde triangulariter emarginatum; antennæ graciles, articulis basalibus 2 quam sequentes robustioribus (2° breviori), articulis 3°—8° gradatim brevioribus, 9°—11° clavam distinctam formantibus, hac laxe articulata; oculi magni, fere integri, sat convexi, minus fortiter granulati; prothorax fortiter transversus, transversim fortiter convexus, carina antebasali nulla, carina basali ad latera angulata et antrorsum ad latera media producta; scutellum parvum; elytra sat brevia, striata, postice subverticalia; coxæ anticæ inter se latissime remotæ; pedes modici, anticis quam ceteri longioribus; tarsorum anticorum articulus basalis quam ceteri conjuncti parum (posteriorum multo) brevior, 3° in 2° inserto; unguiculi subtus dente parvo armati; metasternum breve; pygidium manifestum, subquadratum.

According to M. Lacordaire's classification the small insect for which I found this genus is a member of the "Anthribides vrais," by virtue of the following characters in combination:—Antennæ inserted on the sides of the rostrum, carina of pronotum basal, rostrum of subparallel form, body not elongate-cylindric. In that group it is distinguishable by the following characters:—Front coxæ very widely separated (more widely than in *Phlæobius*), rostrum truncate at its extremity, antennæ and legs extremely like those of *Aræocerus.* The outline of the prothorax and elytra is not unlike that of *Ceutorrhynchus.* I am uncertain as to the sex of the examples before me. The front margin of the eye itself forms the hind wall of the scrobe.

S. planatum, sp. nov. Piceum vix rufescens, antennis (clava excepta) et tarsorum apice testaceis; sat opacum; sparsim

minus perspicue cinereo-pubescens; supra confertim subtilissime (haud multo aliter quam *Aræocerus fasciculatus*, De Geer) subaspere punctulatum; rostro cum capite continuo; prothorace vage inæquali; elytris striatis, in parte suturali conjunctim planatis; pedibus pube cinerea plus minusve perspicue maculatis; antennis prothoracem medium paullo superantibus, clava quam articuli 4us—8us conjuncti vix brevioribus, articulis 9° vix (10° manifeste) transverso 11° obconico quam latiori parum longiori. Long., $1\frac{1}{5}$ l.; lat,, $\frac{4}{5}$ l. (vix).

There are indications on the specimen before me of the whitish hair-like scales on the upper surface having been in places condensed into somewhat conspicuous blotches which are chiefly about the middle of the front of the prothorax, on the scutellum and about the sides of the prothorax and elytra, especially near the shoulders, and it is possible some such markings may have been rubbed off, although the presence of the even thinly distributed pubescence seems inconsistent with the surface being much abraded. A vague depression runs down the middle of the prothorax longitudinally, on either side of which slightly behind the middle is a distinct transverse gibbosity. The fourth interstice of each elytron is more conspicuous than the other interstices, chiefly through the space between the fourth interstices of the two elytra (including the suture) being flattened. Most of the interstices are furnished in some part of their length with unequal feebly raised tubercles. The head and rostrum together form a perfectly even flattened surface without any trace of distinction *inter se*. The insect has much of the structure of *Aræocerus* but with the rostrum and scrobes of a true *Anthribid*.

Victoria.

S. contemptum, sp. nov. Fere ut præcedens (*S. planatum*) coloratum et pubescens sed pedibus dilutioribus et elytris ad apicem rufis; rostro cum capite continuo; prothorace æquali, lateribus mox ante basin manifeste sinuatis, angulis posticis extrorsum manifeste acutis; elytris æqualiter convexis, interstitiis vix perspicue tuberculatis; antennis prothoracis basin attingentibus, clava quam articuli 3us—8us conjuncti vix breviori, articulis 9°—11° elongatis (10° quam 9us et 11us manifeste breviori. Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l. (vix).

This species closely resembles the preceding in general appearance, but is certainly distinct. The pronotum is devoid of inequalities and the elytra have no longitudinal flattening on the sutural region, their interstices also being all but devoid of inæqualities. The sides of the prothorax are quite strongly incurved just in front of the base, and the hind angles of that

segment are very distinctly pointed outward, neither of which characters is found in *S. planatum.* The antennæ are considerably longer in *S. contemptum* than in *S. planatum*, their club especially, of which all the joints are at least twice as long as wide. It is not improbable that these antennal differences may indicate that my example of *contemptum* is a male, and that of *planatum* a female, but they are certainly not the sexes of one species. There is scarcely any indication of the pubescence being condensed in patches on the example before me, but I do not attach much importance to this character, as I find that the condensed long scales on the small *Anthribidæ* are very easily rubbed off, and therefore very unreliable for identification of species.

N. Queensland; given to me by Mr. Koebele.

NOTŒCIA (gen. nov. *Anthribidarum*).

Mas. Rostrum transversum, depressum, ad apicem arcuatim emarginatum, ad basin quam caput haud angustius, scrobibus lateralibus foveiformibus apertis; antennæ quam corporis dimidium sublongiores, graciles, clava minus laxe 3-articulatis, articulis basalibus 2 quam sequentes robustioribus (2° longiori), 3° 4° que inter se sat æqualibus, 5°—8° quam 4us sat brevioribus, 9° obconico 8° longitudine æquali, 10° brevi transverso, 11° quam 9us vix longiori; oculi magni, sat subtiliter granulati, antice sat profunde emarginati, supra inter se approximati; prothorax transversus æqualis, carina antebasali nulla, carina basali ad latera angulata et antrorsum ultra prothoracis medium producta; scutellum parvum; elytra subcylindrica brevia (quam conjunctim latiora circiter ut 10 ad 7 longiora), ad basin leviter gibbosa, striata, postice verticalia; coxæ anticæ subcontiguæ; pedes modici; tarsi antici quam tibiæ haud breviores, articulo basali quam ceteri conjuncti sublongiori; unguiculi subtus dente parvo armati; pygidium manifestum; corpus pubescens.

The insect for which I propose this generic name falls into M. Lacoradire's group "*Anthribides vrais*" by virtue of the following characters:—Antennæ inserted on the sides of the rostrum, carina of pronotum basal, rostrum parallel-sided, body not elongate. The genus, however, can hardly be placed in M. Lacordaire's tabulation of the genera of that group as its two main divisions are "front coxæ widely separated, rostrum strongly emarginate in front," and "front coxæ subcontiguous, rostrum not or scarcely emarginate in front," whereas in this genus the front coxæ are subcontiguous and the rostrum is quite strongly emarginate in front. Its most striking characters are found in its very large eyes, strongly emarginate in front, and

separated from each other on the forehead by a space only about one-third of the width of the rostrum, and its open scrobes which cut the upper surface of the rostrum sufficiently to be both visible when viewed from above. This form of scrobes is an approach to their form in the *Aræocerides*, in which, however, both scrobes are *entirely* visible when viewed from above, and the interval between them is less than the interval between the eyes, whereas in this genus (and others with the scrobes visible and lateral) the interval between them is greater than that between the eyes and only a small part of both scrobes can be seen together.

N. reticulata, sp. nov. Piceo-rufa, pube albida variegata; hac in rostro vage, in capite medio longitudinaliter (et circa oculos) lineatim, in prothorace vage, in scutello confertim, in elytris reticulatim et maculatim, in pygidio ita ut annulos 2 format, in sternis abdominis lateribus pedibusque (in his interrupte) sat dense, disposita; antennarum clava et pedum nonnullis partibus obscuris; corpore toto (pube haud abrasa) confertim subtilissime subaspere punctulato; prothorace fortiter transverso, antice minus fortiter angustato, lateribus parum arcuatis; elytris indistincte (latera versus magis perspicue) striatis, striis vix perspicue punctulatis. Long., $1\frac{3}{4}$ l.; lat., $\frac{7}{10}$ l.

On this pretty little species fine dense red-brown very short pubescence covers the upper surface so closely that there is little apparent sculpture; but, no doubt, if the pubescence were removed underlying sculpture would appear. On the red-brown derm-pubescence there is variegation formed by longer pubescence of ashy-white colour. This longer pubescence is vaguely scattered over the rostrum and pronotum and densely clothes the small scutellum; on the head it forms fine lines and on the elytra it runs in fine sinous longitudinal lines, which are here and there transversely connected,—some of the transverse connections (especially between the third and fourth longitudinal lines) being dilated into conspicuous blotches. The derm-pubescence is more red than brown on the head and becomes gradually less red and more brown hindward. The inequalities of the elytral surface (which are likely to be a generic character) are feebly defined, and best observed by looking at the insect from the side when there is seen to be feeble gibbosity near the base with irregular depression behind the gibbosity, then a scarcely elevated longitudinal ridge on the third interstice slightly behind its middle and a still slighter elevation a little nearer the base on the subsutural interstice while between the ridge on the third interstice and the lateral margin the surface is scarcely visibly depressed.

N. Queensland; sent to me by the late Mr. Cowley.

MISTHOSIMA.

The species described below may be referred I think to this genus which was founded by Mr. Pascoe to include two insects from Borneo. It agrees very well with the characters attributed to the genus by its author and if not a true congener of the already described species must represent a closely allied new genus distinguishable by characters not mentioned in the diagnosis. The only discrepancies are slight, consisting in the second antennal joint being scarcely shorter than the basal one and the metasternum not quite so short as in *Aræocerus* (as, according to description, it should be) but these alone scarcely justify the formation of a new genus.

M. dorsonotata, sp. nov. Oblonga; picea, antennarum basi labro femoribus tibiisque testaceis; pube densa fusca vestita, hac pube cinerea concinne maculatim variegata; antennarum articulo 2° quam 1us vix breviori; supra confertim aspere subtiliter (in elytris quam alibi paullo minus subtiliter) punctulata; elytris subtilissime striatis; pube in corpore subtus quam in corpore supra magis cinerea. Long., $1\frac{3}{4}$ l.; lat., $\frac{3}{5}$ l.

The ashy or whitish pubescence of the upper surface is distributed as follows:—On the head it predominates (the fuscous colour forming two longitudinal lines dilated in front and behind); on the prothorax it is most conspicuous on the sides and middle line; on the elytra it forms numerous small clearly defined evenly distributed spots, three somewhat larger placed transversely across the base, and a common much larger triangular patch (its apex pointing forward) about the middle of the suture.

North Queensland.

DOTICUS.

This genus is unsatisfactorily close to *Aræocerus*. Its author (Mr. Pascoe) says that it differs from *Aræocerus* by the greater length of its front legs, the greater width of its tarsi and the deeper insertion of the third tarsal joint in the second. To this it may be added that (so far as my experience goes) the species with the legs of *Doticus* are considerably larger than any with the legs of *Aræocerus*. Nevertheless I am of opinion that the generic distinction of the two cannot be maintained. I have before me a specimen which is certainly I think *D. palmaris*, Pasc. *Metadoticus*, Olliff, seems to be quite indistinguishable from *Doticus*. The name used by Olliff seems to have been suggested by the author of *Doticus*, and yet there is nothing in his diagnosis to distinguish it from that of *Doticus*, nor does he mention *Doticus*, but compares *Metadoticus* to *Ethneca*, with which *Doticus* has so little connection that it would be hard to find two

Anthribidæ much less allied to each other than they are. Olliff's species (the too common *Metadoticus pestilens*) is quite unmistakable and the insect generally called by that name agrees so perfectly with Olliff's somewhat full specific description that it seems impossible we can be mistaken in our identification of *M. pestilens.* I can find no generic distinction between *M. pestilens* and the insect mentioned above as *D. palmaris.*

D. æqualipennis, sp. nov. Late ovalis; piceus, pube brunnea maculatim vestitus; supra confertim subtilissime subaspere punctulatus; prothorace minus fortiter transverso, antrorsum a basi arcuatim fortiter angustato, æquali; elytris æqualibus, striatis, striis sat fortiter nec crebre punctulatis, interstitiis planis. Long., $3\frac{1}{2}$ l.; lat., $1\frac{3}{5}$ l.

The head is entirely covered with bright brown pubescence except a longitudinal vitta of dark brown pubescence on either side of the middle; the pronotum is confusedly variegated with bright brown pubescence on the piceous derm; on the elytra the piceous derm is variegated by bright brown pubescence arranged longitudinally on the interstices, the pubescence being continuous (on the specimen before me, which is evidently not at all abraded) on the front one fifth part of most of the inner seven interstices and nearly so on about the hinder half of the inner five interstices, but on the rest of the interstitial surface it takes the form of small square spots; where the pubescence is not of bright brown colour it is scarcely less dense, but is of the colour of the derm; that of the under surface is uniformly of a pale ashy colour. This species seems to agree absolutely with *D. palmaris,* Pasc., and *M. pestilens,* Oll., in its structural characters. It is very distinct from both, as a species, owing to the even surface of its pronotum and elytra.

Queensland; sent to me by Mr. G. Masters as No. 77.

ARÆOCERUS.

This genus is somewhat numerously represented in Australia, although no species of it have yet been recorded in Australia in such fashion as to be capable of confident identification. In 1835 Boisduval published a diagnosis consisting of nine words of *Anthribus sambucinus,* which he thought might be a variety of *Anthribus coffeæ,* Fab., and the latter (according to Lacordaire) is identical with *Aræocerus fasciculatus,* De Geer. Doubtless therefore *A. sambucinus* is an *Aræocerus* and it now stands in our Catalogues as a variety of *A. fasciculatus.* I have not access to De Geer's description of *A. fasciculatus,* but I know the insect as a Hawaiian *Aræocerus* that the eminent Coleopterist Dr. Sharp named for me. I have examples from tropical Queensland of an *Aræocerus* that I cannot separate

from *fasciculatus*, but I do not think it likely to be *sambucinus*, Boisd., as the habitat of the latter is presumably the neighbourhood of Sydney, where I have taken an *Aræocerus* perfectly distinct from (though closely resembling superficially) *fasciculatus*, and which I have little doubt is the true *sambucinus*.

The species of this genus are very difficult to deal with on account of their pubescence being extremely easily rubbed off, —so that it is necessary to rely almost entirely on structural characters for identification and the descriptions of markings can be but little trusted for identifying any but very fresh specimens,—and also from the absence (alluded to by M. Lacordaire) of any readily available character for determining the sex of a specimen. In studying a considerable number of examples of *Aræocerus* from widely separated parts of Australia I find, owing to the difficulties mentioned, a certain number of forms which I believe to represent additional species, but which I hesitate to treat as certainly distinct, and in the following pages I have limited myself to the well-marked species.

The characters of some of the *Aræoceri* described below do not altogether agree with Lacordaire's diagnosis of the genus, but I am satisfied that the characters in question are not truly generic.

The following tabulation will assist in the determination of the *Aræoceri* known to me as Australian.

A. Each elytron having a well developed basal crest *bicristatus*, Blackb.
AA. Elytra even at the base,—or nearly so.
  B. Ninth joint of antennæ not or scarcely longer than tenth.
    C. Legs dark... ... ... *Koebelei*, Blackb.
    CC. Legs of pale colour ... ... *fasciculatus*, DeG.
  BB. Ninth joint of antennæ notably longer than tenth.
    C. Antennæ long enough to reach the base of the prothorax.
      D. Antennal club moderately robust (about as much so as in *D pestilens*, Olliff) ... *sambucinus*, Boisd.
      DD. Antennal club notably more slender ... *lindensis*, Blackb.
    CC. Antennæ not long enough to reach base of prothorax ... ... *asperulus*, Blackb.

A. bicristatus, sp. nov. Ovalis, minus latus; sat convexus; picea, pube læte brunnea dense vestita, hac pube cinerea et nigricanti variegata (hac in pronoto ad latera et medium et in elytris maculatim, illa in elytris sparsissime maculatim, dispositis); antennis prothoracis basin attingentibus, testaceis, clava fusca, articulo 9° quam 10us vix longiori; prothorace minus fortiter transverso, antice fortiter angustato, lateribus leviter arcuatis, basi bisinuata, supra crebre aspere punctulato, angulis posticis acutis; elytris crebre aspere

(quam pronotum vix magis subtiliter) punctulatis, striatis striis puncturis sat magnis leviter impressis, interstitiis tuberculis seriatim instructis, his vix elevatis nisi in interstitio 3° in quo tuberculus anticus cristam longitudinalem bene elevatam format (fere ut *Dotici pestilentis* Olliff sed minus elevatam); femoribus ad apicem haud ut dens productis; tarsis sat fortiter (fere ut *A. fasciculati*, De Geer) elongatis.

Maris tibiis anticis intus ciliatis; tarsis anticis quam feminæ multo robustioribus, et setulis elongatis vestitis. Long., 1—1$\frac{3}{5}$ l.; lat., $\frac{2}{5}$—$\frac{3}{5}$ l.

Readily distinguishable among the Australian *Arœoceri* by the crest-like tubercle near the base of the third interstice of its elytra. In a fresh specimen the alternate elytral interstices bear a number of rather conspicuous little tubercles covered with pubescence (on some of the tubercles darker, on others lighter, than that of the general surface) which is a little longer than of the general surface, while the basal margin of the elytra is entirely and narrowly bordered with red-brown pubescence. In abraded specimens the interstitial tubercles are much less conspicuous. Compared with *Doticus palmaris*, Pasc., and *pestilens*, Olliff, the present species is, *inter alia*, very much smaller and narrower.

Queensland; given to me by Mr. Koebele.

A. Koebelei, sp. nov. Sat late ovalis; sat convexus; nigricans, prothorace antice et postice et pedibus plus minusve rufescentibus, antennis (clava excepta) rufis; pube albo- vel rufo-cinerea in pronoti parte anteriori et in elytrorum partibus scutellari humeralique et interstitiis alternis maculatim vestitus; antennis prothoracis basin attingentibus, articulo 9° quam 10us vix longiori; prothorace fere ut *A. bicristati* sed magis transverso; elytris fere ut *A. bicristati*, sed interstitio 3° basin versus haud gibboso; femoribus ut *A. bicristati*; tarsis quam *A. bicristati* magis robustis, minus elongatis. Long., 1$\frac{1}{2}$—2 l.; lat. $\frac{3}{5}$—1 l.

Maris tibiis anticis leviter sinuatis, intus ciliatis et subtiliter crenulatis; tarsis anticis breviter pilosis et leviter dilatatis.

Readily distinguishable from its Australian congeners known to me by its almost black colour, and its dark legs. It is a much broader and more robust species than *A. bicristatus*. In a fresh specimen the whitish pubescent spots stand out very conspicuously on the blackish general surface. They form a slight mottling on the head, and front and base of the pronotum, an elongate patch including the scutellum, a patch (of somewhat reddish tone) on each shoulder, and a number of smal spots on the alternate inter-

stices of the elytra. I have two examples sent to me by Mr. Masters which may possibly represent a closely allied distinct species, as they are of even broader and more robust form than the type, with the pale spots on the elytra evidently (though only slightly) raised, but their colours and markings agree so exactly with those of the type that I am disposed to think them merely fine and highly developed examples of the one species.

Queensland; given to me by Mr. Koebele.

A. lindensis, sp. nov. Mas. Brevis; latus; sat convexus; rufo-brunneus, sternis et antennarum clava piceis; pube cinerea in partibus vestitus sicut partes haud pubescentes ut notulæ obscuræ apparent (harum præsertim manifesta est in elytris notula magna basalis subsuturalis,—in exemplis nonnullis cum alterius elytri notula conjuncta); antennis prothoracis basin vix attingentibus, articulo 9° quam 10us sesquilongiori, clava sat gracili; prothorace sat transverso, confertim subtilius granulato - punctulato, antice angustato, lateribus modice arcuatis, angulis posticis (superne visis) sat rectis; elytris striato - punctulatis, interstitiis confertim aspere punctulatis; femoribus subtus (anticorum parte media acute trispinosa) mox ante apicem profunde emarginato, apice ipso deorsum (ut dens parvus) acuto; tibiis anticis intus subtiliter manifeste crenulatis; tarsorum anticorum articulo basali sat breve setulis elongatis vestito; coxis anticis inter se anguste separatis. Long., 1—1$\frac{1}{5}$ l.; lat., $\frac{1}{2}$—$\frac{3}{5}$ l.

This species is at once separable from the preceding two (*bicristatus* and *Koebelei*) and from *fasciculatus*, De G., by the peculiar structure of the front femora of its male. The markings (resulting from the presence of spaces on which the ashy pubescence is wanting) form a vague mottling on the prothorax and elytra, of which the most conspicuous feature is a rather large basal elytral spot close to the scutellum on either side (the two spots united in some examples). This basal elytral spot appears very dark and well defined when the insect is looked at obliquely from in front, but is much less noticeable when looked at from behind. The other parts of the elytra devoid of ashy pubescence appear as small spots running into indistinct oblique fasciæ,—in some examples their fascia-like disposition scarcely discernible.

Although I have taken about seven specimens of this insect, they are all males.

S. Australia (Eyre's Peninsula).

A. sambucinus, Boisd. Præcedenti (*A. lindensi*) affinis; minus brevis; antennarum clava magis robusta; elytris ad basin haud vel vix perspicue plaga obscura notatis; tarsorum anticorum articulo basali sat majori.

Maris femoribus tibiisque anticis fere ut *A. lindensis*, sed spinis (in illius parte media subtus positis) multo brevioribus vel granuli formibus; tarsorum anticorum articulo basali paullo magis robusto et setulis elongatis vestito.
Feminæ femoribus anticis ad apicem vix deorsum productis, tibiis intus haud crenulatis, tarsis haud setulis elongatis vestitis. Long., $1\frac{1}{2}$—$1\frac{3}{5}$ l.; lat., $\frac{7}{10}$ l.

Distinctly larger than *A. lindensis* and without (or almost without) any indication of the dark blotches at the base of the elytra. Differs from the male of *lindensis* (and no doubt from the female also) by the much less slender club of its antennæ and the notably larger basal joint of its front tarsi. The male differs from the male of *A. lindensis* by the sexual ante-apical emargination and apical tooth of its femora being present only in the front pair and by the very much feebler inequalities on the middle part of the undersurface of its front femora. Differs from *fasciculatus*, De G. *inter alia* by its sexual characters.

Widely distributed in Southern Australia.

A. asperulus, sp. nov. Ovalis; minus latus; sat convexus; piceus, pronoto antice elytris tibiisque dilutioribus, antennis (clava excepta) rufis; pube cinerea sparsim (exemplorum visorum haud maculatim) vestitus; antennis prothoracem medium parum superantibus, articulo 9° quam 10us sesquilongiori; prothorace sat fortiter transverso, ante basin anguste transversim depresso, in ceteris partibus æquali nullo modo canaliculato, confertim minus subtiliter aspere punctulato, angulis posticis extrorsum manifeste prominulis; elytris striatis, striis cancellato-punctulatis, interstitiis aspere subfortiter crebre punctulatis; femoribus mox ante apicem subtus profunde emarginato, apice ipso deorsum (ut dens parvus) acuto; tarsis quam *A. fasciculati*, De Geer, sat brevioribus sat robustioribus; coxis anticis inter se sat late separatis. Long., $1\frac{1}{2}$ l.; lat., $\frac{7}{10}$ l. (vix.).

I am not sure that a new genus ought not to be formed for this insect on account of its short antennæ, comparatively widely separated front coxæ, and curiously shaped femora, but as in the preceding two species the first of the above characters is approached and the last is even exaggerated, I think they may be regarded as a gradual divergence from the typical characters of *Aræocerus* rather than the indication of a really distinct genus. The present species owing to its elongate oval form and pubescence not condensed into spots (I do not think the two specimens before me are abraded) has scarcely the facies of *Aræocerus*, but the preceding two species (which are undoubtedly allied to it) have quite the facies of *Aræocerus*. The insertion of

the antennæ is altogether as in a typical *Aræocerus* in being slightly nearer to the middle line of the head and rostrum than is the inner margin of the eye. The specimens before me are females. Their antennal club is short and moderately stout.

S. Australia; Eyre's Peninsula.

ARÆOCERODES (gen. nov. *Anthribidarum*).

Caput transversum; rostrum transversum, supra sat planum, ad apicem truncatum, ad basin quam caput haud angustius, scrobibus ut *Aræoceri;* antennæ prothoracis basin paullo superantes, sat graciles, articulis basalibus 2 quam ceteri robustioribus (2° longiori), 8° ad apicem leviter dilatato, 9°—11° clavam elongatam laxe articulatam formantibus; oculi oblongo-ovales haud (vel vix) emarginati, grossissime granulati; prothorax transversus, æqualis, antice modice angustatus, carina antebasali nulla; carina basalis ad latera angulata et antrorsum brevissime producta; scutellum angustum; elytra convexa, æqualia, striata, striis fortiter nec crebre punctulatis; coxæ anticæ sat contiguæ; pedes modici, anticis quam ceteri longioribus; tarsi modici, articulo 3° in 2° profunde inserto; unguiculi subtus dentati.

Structurally near to *Aræocerus*, but of evidently more cylindric form and with narrow, elongate, very coarsely granulated eyes. The species is the smallest *Anthribid* that I have seen.

A. lilliputanus, sp. nov. Pallide testaceus, antennarum clava obscura; pube albido-testacea vestitus, hac in elytris trifasciatim disposita; capite prothoraceque confertim subfortiter granulatis; prothoracis angulis posticis (superne visis) retrorsum acutis. Long., $\frac{2}{3}$ l. (vix); lat., $\frac{3}{10}$ l.

The characters not mentioned in the above specific description are fully stated in the generic diagnosis and need not be repeated. Its excessively minute size will at once distinguish this insect from all the previously described Australian *Anthribidæ*.

N. Queensland; sent to me by the late Mr. Cowley.

PHYTOPHAGA.

CLEPTOR.

I have before me examples of both species of this genus, named by Mr. Jacoby and agreeing so well with Lefèvre's descriptions that I can feel no doubt of their identity. But I think the genus is not rightly placed next to *Edusa* as it seems to me very much closer to *Colaspoides*, of which it entirely reproduces the prosternal characters. M. Lefèvre indeed characterises the *Edusitæ inter alia* by the phrase "prosternum oblongum" and yet places *Cleptor* in that group in spite of his diagnosis of its

prosternum as being "latius quam longum." I can really find no very marked character to distinguish *Cleptor* from *Colàspoides* except in its eyes being almost without sinuation. M. Lacordaire distinguished the "*Edusites*" from the "*Endocephalites*" (containing *Colaspoides)* by the presence in the former of transverse elytral rugosities, but this distinction is not reliable. M. Lefèvre mentions the rugosities as only "generally" present in the former group, M. Lacordaire himself admits that in some *Edusites* "elles peuvent passer inappercues," and I possess species of *Colaspoides* in which they are not quite wanting. The groups then (as characterised by M. Lacordaire) cannot be maintained; nor does M. Lefèvre, though accepting the groups, suggest any better distinction. Whether it would be practicable and desirable to regard *Edusa* and *Colaspoides* as the typical genera of two groups (which would have very different contents from those mentioned above) distinguished from each other by the form of the prosternum I must leave to the decision of authors better equipped than I am for studying a large cosmopolitan collection of *Eumolpides*, but however the genera should be grouped I am convinced that *Cleptor* ought to stand close to *Colaspoides*. Along with the examples of *Cleptor* mentioned above Mr. Jacoby sent me a specimen as *Colaspoides xanthopus*, Har., which appears to be correctly named, but is certainly, I think, a *Cleptor*. It is identical with a specimen I received from the Chapuis' collection ticketed "*Neotaxis fulgida.*" I cannot find that Dr. Chapuis ever published such a genus and species. Possibly the genus *Cleptor* was published at such time as to forestal *Neotaxis*,—but at any rate it indicates that Dr. Chapuis did not place Harold's insect in *Colaspoides*.

The following is a new species of *Cleptor*.

C. Haroldi, sp. nov. Glaber, supra cyanescens viridi-micans, subtus niger (certo adspectu aureo-vel cupreo micans), antennis ferrugineis apicem versus obscurioribus, pedibus piceis plus minusve rufescentibus; pronoto crebre subtilius punctulato, puncturis singulis oblongis; scutello lævi; elytris in disco medio crebre fortiter (in ceteris partibus minus crebre minus fortiter) vix seriatim punctulatis, pone basin vix manifeste impressis, pone humeros certo adspectu transversim leviter rugatis. Long., $2\frac{1}{2}$ l.; lat., $1\frac{3}{5}$ l.

Compared with *C. rufimanus*, Lef., the pronotum is considerably more closely punctulate, with the lateral puncturation much more evidently offering a longitudinally rugate appearance, while the puncturation of the elytra is much finer near the lateral margins; the form also is notably less convex. Compared with *C. inermis*, Lef., and *xanthopus*, Har., *inter alia multa* there is scarcely any indication of a transverse impression near the base of the elytra.

N. Queensland.

NEOCLES.

N. innocuus, sp. nov. Minus elongatus; piceus plus miuusve metallico-micans, capite antennis palpis femoribus tibiis tarsisque rufis; pube aureo-brunnea (hac nonnihil maculatim disposita) vestitus; capite sat profunde ruguloso; prothorace quam longiori vix latiori, antrorsum leviter angustato (nihilominus, superne viso, fortiter angustatus apparet), antice valde producto, fortiter granulo so-ruguloso, longitudinaliter leviter late sulcato, lateribus minus arcuatis, angulis anticis sat rectis posticis obtusis; elytris subseriatim confertim punctulatis et granulatis, nullo modo costatis. Long., $3\frac{1}{5}$ l.; lat., $1\frac{3}{5}$ l.

This genus is remarkable among the *Eumolpides* by the presence of prosternal channels for the reception of the antennæ, and by a facies very unlike that of a typical *Eumolpid.* Only one species has been described hitherto—*N. sulcicollis*, Chp., of which I possess the type. Owing to the front margin of the pronotum being very strongly produced forward in the middle the prothorax appears (when viewed from above) to be very much more narrowed in front than it really is, and owing to the extero-anterior angles of the prosternum being strongly produced the pronotum (viewed in a somewhat oblique direction which discloses the prosternal angles) appears to have spiniform front angles. The present species differs from *N. sulcicollis* by, *inter alia*, its non-costate elytra, and the sides of its prothorax (though slightly serrate, yet) without a defined median angular projection.

N.S. Wales; Tweed R. district.

CASSIDIDÆ.

CASSIDA.

C. profunde-striata, Spaeth. The description of this insect (Verh. Ges. Wien., 1899, p. 216) reads as if it might well be founded on a specimen of *C. mera*, Germ., which varies from the type in having its elytra more or less spotted with black. I have taken in company specimens with and without dark spots. Herr Spaeth does not mention *C. mera*, to which his insect is at any rate extremely close.

ABSTRACT OF PROCEEDINGS

OF THE

Royal Society of South Australia

For 1899-1900.

Ordinary Meeting, November 7, 1899.

W. L. Cleland, M.B. (President) in the chair.

Exhibits.—J. G. O. Tepper, F.L.S. exhibited a ferruginous sandstone of peculiar form, and some calcareous travertine, the latter showing remarkable weathering; both specimens from the Lake Eyre distict. Mr. S. Dixon some specimens from Mount Morgan mine, and described the conditions under which they were found. Also he gave a description of the labour-saving machinery by which 20,000 tons of ore were treated on the mine per month, and referred to the liberal and enlightened policy pursued by the directors by which they were enabled to attract the best available talent to their service. He also showed some rich tin ore specimens from North Queensland, and a water bag made by the natives of Queensland from the bark of a tree not identified. Mr. Tepper drew attention to botanical experiments by Von Herzule in 1875, and by W. H. Preuss more recently, which tended to prove that plants must manufacture their own mineral matter.

Paper.—"Notes on the Cliffs Separating Aldinga and Myponga Bays," by Edward Vincent Clark, B.Sc.

Ordinary Meeting, December 5, 1899.

W. L. Cleland, M.B. (President) in the chair.

Exhibits.—J. G. O. Tepper, F.L.S., exhibited a beryl lying in a matrix of quartz from near Williamstown. A piece of chalcedony with dentritic markings, and a small spherical body of low specific gravity and well defined marking which was picked up near the sea at Bunbury, W.A. A. Purdie, M.A., showed specimens of fossiliferous cal-

careous rock from the vicinity of Cape Jervis from a raised beach above the Till, and mentioned that Second Valley was well worthy a visit, being evidently grooved out of the glacial till, and exhibiting many travelled boulders.

Papers.—"Descriptions of new Micro-lepidoptera," by Dr. Jefferis Turner. "A Refutation of the Doctrine of Homotaxis," by Prof. Ralph Tate, F.G.S. (Withdrawn.)

Ordinary Meeting, April 3, 1900.

W. L. Cleland, M.B. (President) in the chair.

Exhibits.—Mr. Gittins showed the fruit of a Japanese climbing plant which Mr. J. G. O. Tepper subsequently discovered was that of Akebia quinata, belonging to the order Berberideæ, and a native of China and Japan. Mr. Tepper exhibited some galls from the wattle, Acacia pycnantha, describing the insect which produced them. He also showed a case of mosquitoes, Anopheles, which had been collected by order of the Government to forward to London for the School of Tropical Medicine to examine malarial germs, &c., and made some interesting remarks on this troublesome insect.

Papers.—"A Collection of Birds' Skins from Kalgoorlie, W.A.," by Robert Hall. "Further Notes on Australian Coleoptera, &c.," by Rev. Thomas Blackburn, B.A.

Ordinary Meeting, May 1, 1900.

W. L. Cleland, M.B. (President) in the chair.

Exhibits.—President, referring to minutes of last meeting, stated that it had been noticed that in two districts, widely separated—one in Africa, the other in Indo-China—mosquitoes did not exist, and malarial fever was there unknown. W. Howchin, F.G.S., exhibited graphic granite and felspar from Winulta Creek, and from near Corny Point, Yorke Peninsula, and showed some felspar which the natives had endeavoured to shape for their weapons, but had found very difficult to point owing to the cleavage and hackly fracture of it. He also exhibited specimens of the matrix in which diamonds were found from the De Beer's mine, South Africa. A. Zeitz, F.L.S., Assistant Director of the Museum, exhibited 20 species of abnormally coloured birds collected in South Australia. J. G. O. Tepper, F.L.S., exhibited a piece of wattle tree stem completely riddled by the larvæ of (*Agrilus Australasiæ*) beetles which are so destructive in wattle plantations. Also a rare fungus, *Battarrea* sp.? forwarded from Dalkey by Miss Ware.

PAPER.—"A Tentative Hypothesis of the Nature of Heat as a Form of Energy," by J. G. O. TEPPER, F.L.S.

ORDINARY MEETING, JUNE 5, 1900.

W. L. CLELAND, M.B. (President) in the chair.

PROFESSOR RALPH TATE moved, MR. HOWCHIN seconded—"That the congratulations of this Society be accorded to Joseph Vardon, one of the oldest Fellows of the Society, upon his election as member of the Legislative Council for the Central District of the colony."—Carried by acclamation.

EXHIBITS.—J. G. O. TEPPER, F.L.S., a piece of leather made from hide destroyed by Queensland tick. E. ASHBY, several moths collected by himself; one of which was identified by Mr. Tepper as *Lithosia*. W. HOWCHIN, F.G.S., in connection with his paper on glacial action in Southern Yorke Peninsula, specimens of ice-marked stones. One was an ice-polished granite boulder from a well at Yorktown found in clay 60 ft. down.

PAPERS.—"Evidences of Extinct Glacial Action on Southern Yorke Peninsula," by WALTER HOWCHIN, F.G.S. "Supplementary List of Plants from Mount Lyndhurst Run," by MAX KOCH.

ORDINARY MEETING, JULY 3, 1900.

W. L. CLELAND, M.B. (President) in the chair.

PAPER.—"The Physical Features of Lake Callabonna, with an Account of the Discovery of its Fossil Remains," by PROFESSOR E. C. STIRLING, M.D., F.R.S. (Published in "Memoirs," vol. I., part 2).

ORDINARY MEETING, SEPTEMBER 4, 1900.

W. L. CLELAND, M.B. (President) in the chair.

EXHIBITS.—A. ZEITZ, F.L.S., C.M.Z.S., exhibited two species of crustaceans, *Limnosia* sp.? and *Chelura* sp.? which he discovered boring in the piles of Largs Bay Jetty and destroying the outer surface, whilst the *Teredo* riddles the interior. J. G. O. TEPPER F.L.S., showed a lime fruit affected by a new disease not described by McAlpine in his "Diseases of Citrus Trees." W. H. SELWAY showed some rare wild flowers gathered from the foot of hills some two miles west of Golden Grove; also an orchid Caladenia? from Monarto.

Papers.—(1) "On the Discovery of Fossiliferous Rocks in High Southern Latitudes." (2) "Section of a Well Bore near Wellington," by Prof. Ralph Tate, F.G.S.

"The Complete Theory of Changing the order of Integration in a Multiple Integral (part 1)", by Richard Kleeman. (Withdrawn.)

"Definitions of two new Species of South Australian Polyplacophoræ," by Edwin Ashby.

"Definition of a new Species of South Australian Polyplacophora," by M. M. Maughan.

Annual Meeting, October 2, 1900.

W. L. Cleland, M.B. (President) in the chair.

Exhibits.—W. L. Cleland, M.B., exhibited photographs of aborigines from various parts of Australia with a view of illustrating their uniformity of type.

Annual Report and Balance-sheet were read and adopted.

Election of Council.—President, Prof. Edward H. Rennie, M.A., D.Sc., Lond.; Vice-Presidents, Walter Howchin, F.G.S., W. L. Cleland, M.B.; Honorary Treasurer, Walter Rutt, C.E.; Honorary Secretary, G. G. Mayo, C.E.; Members of Council, Rev. Thomas Blackburn, B.A., Prof. Ralph Tate, F.G.S., Samuel Dixon, W. H. Selway, E. Ashby, and A. M. Morgan, M.B., Ch.B.; Auditor, J. S. Lloyd.

Papers.—"New Australian Mollusca," by Prof. Ralph Tate, F.G.S., and W. L. May. "Further Descriptions of Australian Coleoptera," by Rev. Thomas Blackburn, B.A.

The newly-elected President, Prof. E. H. Rennie, then took the chair, and the Presidential Address, "Factors Producing Uniformity of Type amongst Australian Aborigines," was read by the retiring President, W. L. Cleland, M.B.

Rev. Thomas Blackburn moved, Mr. A. Zeitz seconded—"That the above address be printed in the Society's Transactions."—Carried.

ANNUAL REPORT.

The Council has to report that during the past year an effort has been made to create a greater interest in independent research, as promoted by this Society, by encouraging science students of the University and the School of Mines to attend the ordinary monthly meetings, and also by giving more publicity to them by advertising in the daily press. These efforts have not been without success, but the membership remains almost stationary.

The membership of the Society consists of 11 Hon. Fellows, 68 Fellows, and 6 Corresponding Members.

The second part of the "Memoirs," vol. I., dealing with the Fossil Remains of *Genyornis newtoni*, from Lake Callabonna, the joint production of Prof. E. C. Stirling, M.D., F.R.S., &c., Director, and A. H. C. Zietz, F.L.S., C.M.Z.S., Assistant-Director, of the Adelaide Museum; and the Physical Features of the Lake, by the first-named scientist, has been issued. There seems to be some outside interest in this work already, and, doubtless, when it becomes better known it will find a very prominent place amongst the scientific public. Mr. Walter Howchin, F.G.S., has extended his researches on Past Glacial Action in Southern Yorke Peninsula, where he has made some interesting and valuable discoveries; while Prof. Ralph Tate, F.G.S., has brought under the notice of this Society the unique discovery of fossil remains in high Southern latitudes.

A card catalogue of the Society's books and scientific serial literature is now being prepared, which it is hoped will at once make these valuable works more accessible to the Fellows and Members.

THE TREASURER IN ACCOUNT WITH THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Dr.	£ s. d.	£ s. d.
Oct. 1, 1899.		
To Balance		105 6 0
" Subscriptions—		
Royal Society	60 7 9	
Field Naturalists' Section ...	17 0 0	
Astronomical Section	18 12 6	
		96 0 3
" Donations		0 10 0
" Government Grants—		
Ordinary	76 13 0	
Illustrating Fossil Fauna of S. Australia	100 0 0	
		176 13 0
" Interest		4 7 9
		£382 17 0

Cr.	£ s. d.	£ s. d.
By Cost of Transactions—		
Printing	100 9 0	
Illustrating	25 3 3	
Publishing	11 5 6	
		136 17 9
" Cost of Memoirs—		
Printing	38 5 0	
Illustrating	35 10 6	
Publishing	7 7 6	
		81 3 0
" Wages—Caretaker		3 0 0
" Printing, Postage, and Stationery ...		7 1 9
" Library		1 0 6
" Grants in aid—Field Naturalists' Section		10 0 0
" Advertising		0 9 0
" Exchange on Cheques		0 3 0
" Balance in Savings Bank, Oct. 1, 1900		143 2 0
		£382 17 0

Audited and found correct.

EDWIN ASHBY, Auditor.

WALTER RUTT, Treasurer.

Presidential Address.

FACTORS PRODUCING UNIFORMITY OF TYPE AMONGST AUSTRALIAN ABORIGINES.

By W. L. Cleland, M.B.

(Read October 2, 1900.)

In offering a Presidential Address I may congratulate the Society on the production of Part 2 of its "Memoirs" during the year; and also that the Government has again placed on the estimates a further sum of £100 towards the publication of Part 3, descriptive of the Calabonna fossils. It is also pleasing to note that the value of the anthropological work done by Prof. Baldwin Spencer and our fellow colonist, Mr. F. G. Gillen, S.M., has been appreciated by leading scientific men in Great Britain. This has led to a memorial being sent to the South Australian Government and the University of Melbourne, that these two gentlemen might be allowed a further opportunity of studying the aboriginal habits and customs in Central Australia. It is extremely gratifying to know that the authorities have seen their way to granting the request, and that the princely generosity of Mr. David Syme, of the Melbourne *Age*, has supplied the necessary funds.

It may be of interest to the Fellows of the Society if a short space is devoted to the consideration of how there exists such a uniformity of type in the appearance of the aborigines of Australia. To enquire why, considering the Continental dimensions of Australia, practically the same type of features appears in parts separated by hundreds of miles. To enquire why evolution, which is always at work, has not produced greater diversity of type.

It has been pointed out by Romanes, in his work, "Darwin and After Darwin," that evolution rests on a tripod consisting of Variability, Heredity, and Isolation. And that evolution again is monotypic or polytypic according to certain definite conditions. And, further, that there is no evolution at all if free intercrossing is allowed amongst all the members of the parent stock, and if isolation in any of its many forms is not present. For, although there is a tendency to variability in each individual, yet heredity in the event of free intercrossing neutralises this tendency by the

production of the mean of the whole. Under these conditions heredity tends to uniformity of type if the numbers are large. If, however, the parent stock be separated into parts, which are prevented from interbreeding, or a part of whose progeny becomes less fertile or less adapted to altered conditions, then a new factor, namely, isolation, comes into play, and an evolution or evolutions of type appear as a result. The diversities of these results will depend upon the size of the separated parts. For instance, a parent stock divided into two equal parts by isolation will evolve into two different types because the mean of variability of a-half is different to that of a whole, but the evolution will be slow, because the differences would be slight between the two, other things being equal. If, on the other hand, the separated part is comparatively small, the divergent evolution would be proportionately marked and appear at an earlier date.

To fully appreciate the effects of isolation, considerable emphasis is laid on the species of isolation as distinguished from the form of isolation, the former being much more important as an evolutionary factor. In other words, is the isolation discriminate or indiscriminate; in the discriminate isolation it is a breeding of like with like; in the indiscriminate it is an interbreeding between all the members of a simply separated part. If a breeder divides his flock of sheep into a white part and a black part, it will be a case of discriminate isolation; if simply into numerically two equal parts it will be a case of indiscriminate isolation. Unfortunately, different names have been given to these two kinds of isolation, although practically the same thing is understood. For instance, discriminate isolation is called by Gulich segregate breeding, by Weissman amixia, and by Romanes homogamy; whilst indiscriminate isolation is called by Gulich separate breeding, by Weissmann panmixia, and by Romanes apogamy. To clearly define what he implies by the use of different terms applied to isolation, Romanes makes the following note:—Let isolation be considered a *generic* term; *species* of isolation will be homogamy and apogamy or isolation as discriminate and indiscriminate, and that natural selection may be considered a *sub-species* of homogamy; *forms* of isolation are modes of isolation, such as the geographical, the sexual, the instinctive, or any other of the numerous means by which isolation of either species may be secured; *cases* of isolation are the instances in which any of the forms of isolation may be at work; thus, if a group of intergenerants be segregated into five groups, *a*, *b*, *c*, *d*, *e*, then before tne

segregation there would have been one case of isolation, but after the segregation there would be five such cases.

Variability.—The most important and fundamental cause of evolution must necessarily be the innate tendency of all organisms to vary one from the other, for a close inspection reveals the fact that no two are exactly alike. It is found again that in different species the range of individual variability varies to a considerable extent; that is, that some species are more stable than others. So that conditions that would cause some collections of individuals to evolve in certain directions may be quite inoperative when applied to others. Romanes quotes as an example of the latter, the goose, which Darwin calls an "inflexible type" as compared with most other domesticated birds. He also refers to some extremely striking examples quoted by Weissmann for the sake of showing that there are cases which seem to tell against the general principle of modification as due to apogamy alone. These examples are four species of butterflies, belonging to three genera, which are identical in the polar regions and in the Alps, notwithstanding that these insects have been presumably separated from the parent stocks since the glacial period; and another example refers to a fresh water crustacean (*apus*), the represenatives of which are habitually compelled to form small isolated colonies in widely separated ponds, and, nevertheless, exhibit no divergence of character, although isolation has probably lasted for centuries. Again, on Mount Kosciusko were found specimens of flora and fauna characteristic of the alpine regions of Tasmania. On the other hand, the land mollusca of Maderia and the Sandwich Islands present diversities of types as numerous almost as the different sites suitable for local isolation. It is evident, therefore, that the existence of this tendency or otherwise to individual variability must play a most important determining influence on evolution. In the human species, where the type is pure, the tendency to variability appears to be small, as may be conveniently seen in the Jewish, Negro, and Fellaheen types. In the case of the Australian aboriginal, whether he is autochthonous or an emigrant, he must have been isolated for a lengthened period from other races of man due to his geographical position. His type is found nowhere else, and he has shown but little tendency to vary that type, so that the presumption is on the side of an autochthonous origin. The absence of a tendency to variability must, therefore, have been an important factor in producing uniformity of type amongst the Australian aborigines.

HEREDITY.—Variability would not be of much use in evolution where it not that physical characteristics can be transmitted from parent to offspring. A tendency to variability will exist in all organisms, although the amount of that tendency will vary within very large limits. Heredity may be either a help or a hindrance to evolution, as has been plainly shown by Romanes. In the case of the Australian aborigines, which has it been? According to the "Law" of Delboeuf, quoted by Romanes, a constant cause of variation, however insignificant it may be, changes the uniformity of type little by little, and diversifies it *ad infinitum.* From the homogeneous, left to itself, only the homogeneous can proceed; but if there be a slight disturbance in the homogeneous, the homogeneity will be invaded at a single point, differentiation will penetrate the whole, and, after a time—it may be an infinite time—the differentiation will have disintegrated it altogether. Has this differentiation which existed amongst Australian aborigines been accentuated or diffused by heredity? Prof. Pearson and his colleagues, writing on "Genetic (Reproductive) Selection" in the *Philosophical Transactions* of the Royal Society of London, vol. 192, in their concluding remarks, make the following statement:—There is, so to speak, in every species an innate tendency to progressive change, quantitatively measureable by determining the correlation co-efficients between fertility and organic characteristics and between fertility in the parents and the offspring. This "innate tendency" is no mysterious force causing evolution to take place in a pre-ordained direction, it is simply a part of the physical organization of the individual which does not leave fertility independent of physique and organic relationship, or leave these characters uncontrolled by the principle of heredity. The suspension of natural selection does not denote either the regression of a race to past types, as the supporters of panmixia suggest, or the permanence of the existing type as others have believed. It really denotes full play to genetic or reproductive selection, which will progressively develop the race in a manner which can be quantitatively predicted when once we know the numerical constants which define the characters of a race and their relation to racial fertility. In other words, natural selection must not be looked upon as moulding an otherwise permanent or stable type; it is occupied with checking, guiding, and otherwise controlling a progressive tendency to change.

Heredity, in the presence of free intercrossing, cancels the tendency to variability, causing fixity of type. A considera-

tion of the marriage laws as described in *Native Tribes of Central Australia,* plainly shows that elaborate precautions, no doubt quite unconsciously, are taken to ensure free intercrossing. Referring to various sexual relations, as occurring at corroborees and other tribal ceremonies, the authors express the opinion that the most feasible explanation is that at one time "promiscuity" was the general and universal rule as regards marital relationships. Amongst gregarious animals "promiscuity" must theoretically be the rule, although in practice one or more of the stronger males will usurp to themselves all the females of the group. Promiscuity in itself is detrimental to the fertilising of the ova of higher developed animals, and, if rigorously carried out, would lead to the extinction of the species. Hence is seen the utility of the emotion of jealousy, which finds its fullest expression in man, and acts beneficially as a selective and restrictive influence. In animals it may also be noted, but in a comparatively primitive form, and the remark of the above authors that it is but little developed and scarcely known amongst the Australian aborigines, throws an interesting sidelight on the primordial character of their mental constitution. Promiscuity being then inimical to the propagation of the species, and the application of the principle "that he takes who can" not finding favor with the cunning old men in the presence of the strong young men, it is found that the former gradually evolved what appears at first sight to be a most elaborate system of marital relationships, any infringement of which is punishable by death. Although the term "free intercrossing" seems inappropriate to such a rigid and exclusive system of marriage relationships, yet an examination of these reveals the fact that they in a most effectual manner ensure all the effects of free intercrossing without the evils of promiscuity. For this purpose the native tribes are each divided into what become eight intermarrying groups, the system being more elaborately differentiated in some than in others. In the first place, four groups were arranged, and these were subsequently subdivided. If these first four are looked upon as a first generation, and the subsequent four as a second generation, the following arrangement of letters will show the relationship of the third generation. It may be mentioned that there are no terms amongst the natives expressive of blood relations as distinguished from group relations. For instance, if a man A marries a woman B, the child will not only call A and B father and mother, but all the A's and B's whom the tribal customs would have allowed to be his father and mother had they been mated.

	Intergenerant Groups.		Offspring Groups.	
1st generation ...	$a + b$	produces	g or f	2nd generation.
	$c + d$	"	e " h	
2nd generation ...	$e + f$	"	c " b	3rd generation.
	$g + h$	"	a " d	
3rd generation ...	$a + b$	"	g " f	4th generation.
	$c + d$	"	e " h	

The significance of the word "or" in the above table is that different group-names are given to the children according as to whether "a" &c., &c., is male or female. The above scheme of marital arrangements shows that the progeny of the four first groups (*a*, *b*, *c*, *d*), have to cross-marry in the second generation according to the four second groups (*e*, *f*, *g*, *h*). Their progeny again cross-marry in the third generation, and are called by the same group names as the original four first groups. This complete and systematic intercrossing for three generations causes the principle of heredity to swamp any tendency to divergent or polytypic evolution. Whatever tendency there may have existed to variability would under these conditions have been all in one direction, and have been the mean of the whole, producing a monotypic evolution, because, as Romanes points out, natural selection alone can never produce polytypic, but only monotypic evolution. The marriage laws of the Australian aborigines are seen, therefore, to favor the maintenance of a uniformity of type.

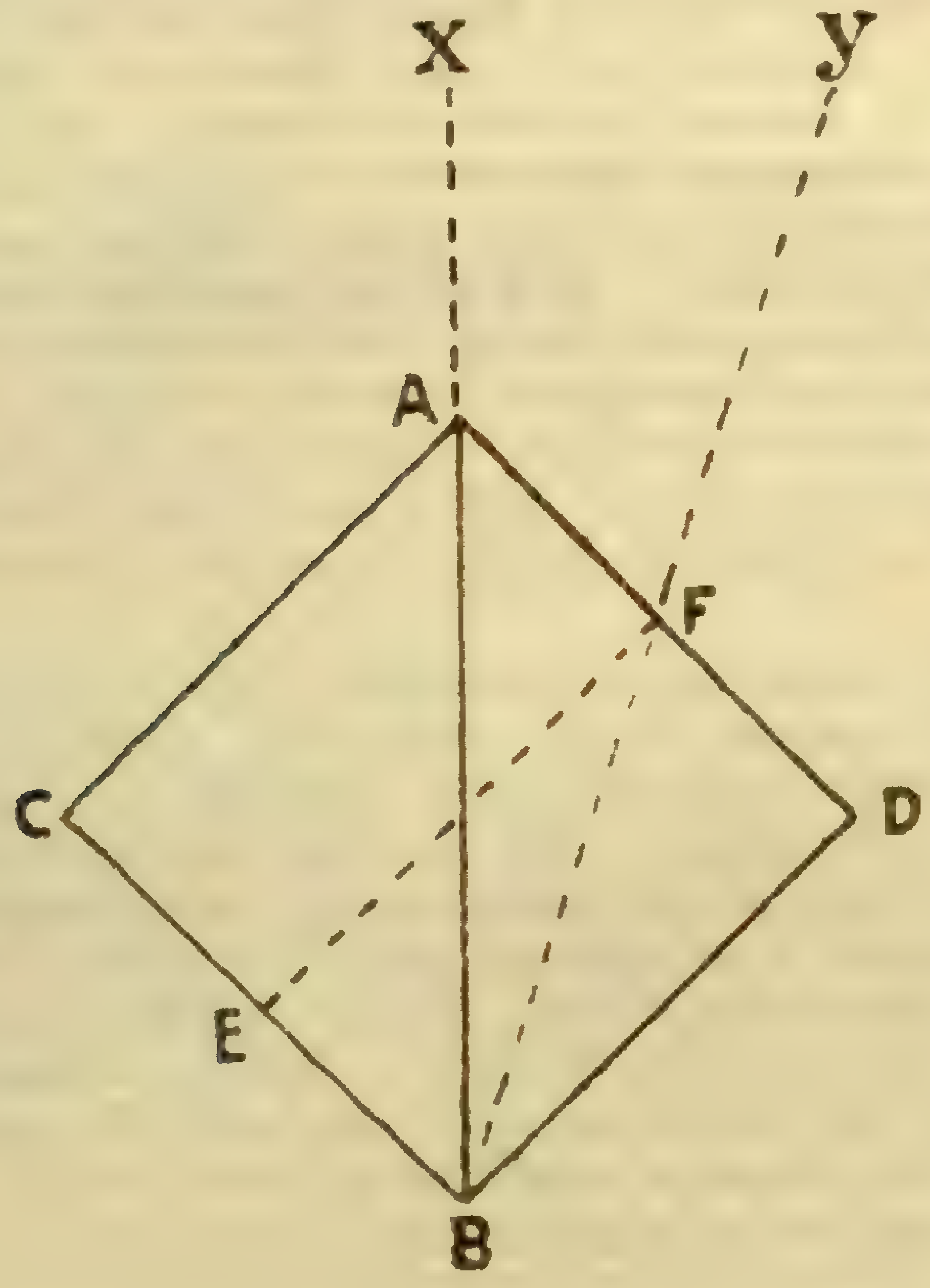
Isolation.—As has been mentioned, isolation is a generic term having species, sub-species, forms, and cases. As a *genus* the isolation of the Australian aboriginal has been a marked one, and, comparatively speaking, a complete one, from the rest of humanity. As a *species* of isolation it may be put under the heading of homogamous or discriminate isolation; that is, the breeding of like with like. There is no evidence of this race having been separated from any parent stock, nor do there exist any traditions pointing to any such past, but everything seems to confirm the idea that they are part and parcel of their environment, or, in other words, autochthonous. The isolation, therefore, has been essentially discriminate. It has been pointed out that that *sub-species* of homogamy called *natural selection*, which is the exclusive breeding between those best adapted to their environment, is ineffective to produce divergence of type unassisted, except in one direction, but that its effects may be cumulative; or, as Pearson writes, it may be occupied with checking, guiding, and otherwise controlling a progressive

tendency to change. Although it is not necessarily maintained that the Australian aboriginal has not changed at all since his first appearance upon the earth, yet the presumption is that if he has changed, he has changed *en bloc*, and very slowly. As to *forms* of isolation, naturally one of the most important is geographical isolation. Australia, as an ethnological province, appears to have been always secluded to a great extent from the rest of the world, so that facilities for the intermingling of other races were but small. In addition to this, Australia, over a very large area, presents a uniformity of physical conditions of an extent scarcely surpassed in any other portion of the earth. Prof. Tate, in a paper read before the Australian Assoc. Advance. of Science in 1888, on the *Influence of Physiographic Changes in the Distribution of Life in Australia*, shows how climatic differences in geological times have profoundly affected the flora and fauna of respective portions of Australia. A rain-map attached to his paper shows that a scanty rainfall of less than 10 inches per annum has been the usual average for about half the continent, and less than 20 inches for another quarter of it, leaving only a well-watered fringe chiefly confined to the eastern and extreme northern sides. The change in climate has, then, affected Australia as a whole rather than as a part, and there have not been left any isolated regions where a different environment of sufficient intensity might by a process of natural selection have led to the divergent evolution of a portion of the Australian aborigines. There exist also no physical barriers to a free intercourse between the various separated portions of the tribes, so that in Australia itself there was no isolation of a geographical form to foster any tendencies to variability of type. Another form of isolation of considerable importance is sexual isolation. This is also called by Romanes physiological isolation. By it is meant a degree of infertility between groups of intergenerants which leads to the extinction of the offspring. This is what occurs in natural selection, whereby there is only a survival of the fittest, the less fittest to the environment or changed conditions disappearing from the scene. Romanes points out that such natural selection cannot conduce to diversity of type, for it is only the fittest type that survives, and the unfit become isolated from the other by a process of extinction. So that, if natural selection has been at work amongst the aborigines to fit them for the various physiographic changes that have occurred from time to time, its effects have all been in the direction of monotypic variation. Another kind of sexual isolation is a certain degree of infertility, which may exist even between different

varieties of the same species, and much more so between different species. If it were not so, varieties and species would after a time become indistinguishably blended so as to lose their specific characters. This infertility in crossing varies greatly in different races. The English are said to be less fertile in crossing with the Negro than are the French and the Spanish, and also with certain aboriginal inhabitants of America. It cannot be said that there is any appreciable element of aboriginal half-breeds in any part of Australia, nor have the Malays left any special impress on the shores of the Northern parts. It is stated that there are some evidences of a superior race having left an impress on a portion of the Australian aborigines, probably towards the eastern littoral portions of Australia, a part that, according to Prof. Tate in his above quoted paper, since the Pluvial Epoch, has gained accessions to its flora from the Indo-Malay province.

The above observations respecting a few of the conditions of life and customs of the Australian aborigines seem to show that these have not been favorable to evolution towards divergent types. For it must be remembered that, although a collection of organisms has not shown any evolutionary progress, it does not at all follow that it was because it had no evolutionary power. Such a condition may be considered as non-existent in biology. Where no progress exists it is because the forces at work are mutually antagonistic, and thus bring about a condition of equilibrium. It is as true in biology as in physics that a body set in motion by a force will continue in motion until stopped by a force equal to that which set it in motion. The tendency to individual variability which is always existent is the initial propelling power in organic Nature, and isolation and heredity are the extraneous forces which may, according to circumstances, accelerate, retard, or bring to a condition of rest the body affected. The direction of evolutionary progress will also be the resultant of the respective strengths of these two latter forces, whilst the rapidity or momentum of the changes will depend on the power of the initial force; that is, the tendency to variability. The familiar diagram of the parrallelogram of forces will make clear what is meant. Let A be a body of intergenerants set in motion by a force BA (variability) in the direction of X (evolution). If two other forces CA (isolation) and DA (heredity) of equal influence act on the body A, there will be no disturbing element as to direction, but they may have an accelerating or a retarding effect on motion according as to whether their line of action is the same as, or

opposed to, that of BA (variability). If, however, one of the forces CA (isolation) is stronger than DA (heredity), and is represented by the line EF, then the evolutionary direction of the body will be towards Y (divergent evolution).



And whilst referring to the uniformity of type amongst Australian aborigines, it is not to be inferred that there are not a number of individual variations in personal appearance, for Baldwin Spencer and Gillen remark that, whilst conforming generally to the usual Australian type of features, there is very considerable difference between various individuals. In some the pronounced curve of the nose gave superficially a certain Jewish aspect, though in many this curve was wanting. It would, therefore, be quite possible by a process of discriminate isolation; that is, a breeding of like with like, or those having characteristic resemblances, to cause a divergent evolution from the common type. As the authors quoted show, the tendency to variability is there, and it is maintained that that is the initial motive power.

With these few remarks I must draw this address to a close by suggesting that an interesting investigation might

be made respecting the proneness or not of the Australian aborigines to vary individually as compared with more mixed or less purely bred races. Prof. Pearson and his colleagues in the *Philosophical Transactions* of the Royal Society, London, have, during the past few years, published *Contributions to the Mathematical Theory of Evolution*, showing how variation may be exhibited by mathematical formulæ and curves, such curves arising in many physical, economic, and biological investigations, as, for instance, various types of anthropological measurements. They say, "if measurements be made of the part or organ in several hundred or thousand specimens of the same type or family, and a curve be constructed of which the abscissa x represents the size of the organ, and the ordinate y the number of specimens falling within a definite small range, dx of organ, this curve may be termed a frequency curve. The centre or origin for measurement of the organ may be taken as the mean of all the specimens measured. In most cases, as in the case of errors of observation, they have a fairly definite symmetrical shape, and one that approaches with a close degree of approximation to the well known error or probability-curve. A frequency-curve, which for practical purposes can be represented by the error-curve, will be termed a normal-curve. When a series of measurements give rise to a normal-curve, we may probably assume something approaching a stable condition; there is production and destruction impartially round the mean. In the case of certain biological, sociological, and economic measurements there is, however, a well-marked deviation from the normal shape, and it becomes important to determine the direction and amount of such deviation." The more data and the greater the number of individual observations there are, the more correct would be any such comparative measurements, and we may confidently expect that the projected extended anthropological investigations of Prof. Spencer and Mr. Gillen will add greatly to the already accumulated store. The presumption is that such an enquiry would show that the curve would approach more nearly a normal-curve in so pure a type as the Australian aborigines than in the more mixed European races.

DONATIONS TO THE LIBRARY

For the Year 1899-1900.

TRANSACTIONS, JOURNALS, AND REPORTS.

Presented by the respective Editors, Societies, and Governments.

Austria and Germany.

Berlin—Zeitschrift der Gesellschaft für Erdkunde, band XXXIII., Nos. 5 to 6; XXXIV. Nos. 1 to 6.

——— Verhandlungen, ditto, band XXVI. Nos. 1 to 10, band XXVII. Nos. 1 to 4; band XXV. Nos. 8, 9. 10.

——— Sitzungsberichte der K. Preussischen Akadamie der Wissenschaften zu Berlin, Nos. XXV. to XXXIX., 1898; Nos. I. to LIII., 1899; Nos. I. to XXXVIII., 1900.

——— Abhand. der König. Preuss. Meteorologisches Instituts, Ergeb. der Beobacht. an der Stationen, II. and III., 1899. Ergebnisse der Niederschlags; Beobachtungen, 1895-96; Ditto, ditto II., 1898.

——— Zeitschrift für Ethnologie, 30th Annual Report, 6, 1898; 31st Annual Report, 1, 4, 5, and 6, 1899; 32nd Annual Report, 1, 2, 3, 1900.

——— Indian Dialects Dictionary of the Lepcha language.

Fribourg—Naturforschende Gesellschaft, Berichte, band XI. No. 1.

Göttingen—Nachrichten von der K. Gesellschaft der Wissenschaften u. d. Georg.-Augusts Universitat. Geschäftliche Mittheilungen, heft 2; ditto, ditto, heft 1, 1900.

——— Math.-Physi. Klasse, heft 1 to 3, 1899; heft 1, 1900.

Halle—Leopoldina Year-Book, 1898.

——— Nova Acta der K. Leopold-Carolina Deutsch. Akad. der Naturforscher, band LXX. Nos. 2 and 4; band LXXIV. No. 1.

Kiel—Schriften des Naturwissenschaftlichen vereins für Schleswig Holstein; band X., heft 1.

Munich—Sitzungsber. der Mathem.-Physik. Classe der K. B. Akad. der Wissenschaften der München.

Munich—Abhandlungen, band XIX., heft 2 and 3, 1899; band XX., heft 1.

——— Ueber Studium und Auffassung der Nnpassungserscheinungen bei Pflanzen Gedächtnissrede auf Philipp Ludwig von Seidel.

Nurnberg—Natural History Society, Abhandlungen, band XII., 1898.

Pola—Veröffentlichungen des Hydrog. Amtes. der K. u. K. Kriegs.-Marme. Gruppe II., heft 1, 2, 1898.

Vienna—Sitzungsberichte der Mathem-Naturwissensch. Classe K. Akad. der Wissensch.

——— Verhandlungen der K. K. Geologischen. Reichsanstalt, Nos. 5 to 16, 1898; Nos. 9 to 10, 1899; Nos. 6, 7, 8, 1900.

——— Verhandlungen der K.K. Zool.-Botan. Gesellschaft in Wien, band XLVIII., heft 1 to 10, 1898; ditto, XLIX., Jahrbach, 1899.

——— Astronomische Arbeiten der K.K. Gradmessungs Bureau, band XI.

——— Annalen der K.K. Naturhist. Hofmuseums, band XIII., Nos. 1 to 4.

Wurzburg—Sitzungsberichte der Physik.-Medicin. Gesellsch., Nos. 1 to 7, 1899.

Australia and New Zealand.

Adelaide—Public Actuary; Reports relating to Friendly Societies, I. and II.

——— Government Geologist; Geological Map of S.A.; Report of Gold Discoveries, Tarcoola, 1900.

——— Woods and Forests Dep.; Annual Progress Report, 1898-99.

——— Adelaide Observatory. Meteorological Observations, 1897.

——— School of Mines; Annual Report, 1898.

——— Public Library, &c.; Annual Report.

Brisbane—Queensland Flora, Parts I. and II.

——— Report on Timber Trees, Herberton District.

——— Botany Extracts from Agricultural Journal.

——— Department of Agriculture, vol. VI., parts IV. and VI.

——— Royal Society of Queensland, Proceedings, vol. XV.

——— Geological Survey; Bulletin 9; Chillagoe Mining District; Bulletin 11; Annual Progress Report, 1900; Geology of the West Moreton or Ipswich Coalfield.

Bendigo—School of Mines and Industries. Rep. of year ending 30th June, 1899.

Melbourne—Public Library, &c.; Catalogue of Scientific

Hobart—Royal Society of Tasmania, Papers and Proceedings, 1898-99.

and Technical Periodical Literature and Libraries in Melbourne.

——— Australasian Institute of Mining Engineers, Proceedings 1st Ordinary Meeting, Rockhampton, Queensland, 1899; ditto, Annual Meeting, Melbourne, January, 1900.

——— Transactions, vol. VI.

——— The Mining Machinery and Processes patented in Australasia, Part I., January-June, 1899.

——— Victoria Naturalist, vol. XVI., Nos. 3, 4, 7, 8, 10, 11, 12, vol. XVII., Nos. 1, 2, 3, 6.

——— Royal Geographical Soc. of Australasia (Victoria); Transactions, vol. XVII., 1899.

——— Royal Soc. of Victoria, Proceedings, vol. XI., part II; vol. XII., parts I. and II; vol. XIII., part I.

——— Department of Mines and Water, Monthly Progress Reports, June, 1899; ditto, ditto (Geological Survey), Nos. 8, 9, and 10; ditto, ditto, Nos. 2, 4, 5, 6, 7, 11, 12, 1900; Progress Report Nos. X. and XI., 1899; Annual Report, 1899.

——— Report of Victorian Goldfields, No. 7.

——— Department of Agriculture, "Fungus Diseases of Citrus in Australia, and Treatment," by McAlpine; "Wine Making in Hot Countries," by Roos.

Perth—Government Geologist, Annual Progress Report, 1899.

——— Year-Book, vols. I. and II., 1898-99.

——— Department of Mines; Supplement "Government Gazette," 25th May, 1900; Report for 1898.

——— Coolgardie Exhibition (Golden West).

Sydney—Sea Fisheries.

——— Parliamentary Report H.M.C.S. "Thetis," 1898.

——— Australian Museum—Memoirs III., pt. 10; The Atoll of Funafuti; ditto, IV., pts. 1 and 2. Trawling Expedition H.M.C.S. "Thetis;" Records III., pts. 6 and 7; List of Works for Exchange—Report to Museum's Association, 1898; Department of Agriculture; Miscellaneous Publications, Nos. 282, 331-2.

Sydney—Linnean Society, vol. XXIV., pts. 2, 3, and 4; Nos. 94, 95, 96, 1899; vol. XXV., pts. 1 and 2, Nos. 97 and 98, 1900.

——— Royal Society of New South Wales, vol. XXXIII.; Journal and Proceedings.

——— Agricultural Gazette, vol. X., pts. 6, 9, 10, 11, 12, 1899; vol. XI., pts. 1 to 10, 1900.

——— Department of Mines and Agriculture, Annual Report, 1898; Record of Geol. Survey of N.S.W., vol. 6, pt. 4; Mineral Resources, No. 8.

Wellington, N.Z.—Flora of New Zealand and outlying Islands.

——— Mines Department, N.Z., 33rd Annual Report of the Colonial Laboratory.

——— New Zealand Institutes, Transactions and Proceedings, vol. XXXI., June, 1899.

Belgium.

La Société Royale des Sciences de Liege. Memoirs. Tomes I. and II., 3rd series.

Canada.

Halifax—Proceedings Nova Scotian Institute of Natural Science, vol. IX., pt. 4, Session 1897-98; vol. X., pt. 1, Session 1898-99; Canadian Record of Science, vol. VII., No. 8; vol. VIII., Nos. 1, 2, and 4.

Ottawa—Geological Survey of Canada; Contributions Canadian Palœontology, vol. IV., pt. 1; Annual Report, vol. X., 1897, with maps, 560, Thunder Bay District, &c.; maps, 589, Thunder Bay District, &c.; maps, 599, Nipissing District, &c.; maps, 606, Nipissing District, &c.

Toronto—Canadian Institute, Proceedings, vol. II., pts. 2 and 3, Nos. 8 and 9, new series; Transactions, vol. VI., pts. 1 and 2, Nos. 11 and 12.

France.

Marseilles—L'Institut Colonial de Marseilles, Annales, 5th Année, 4th vol., 1897; ditto (Macon), Botany of French Antilles.

Nantes—Bulletin de la Société Sciences Naturelles de l'Ouest de la France, tome VIII., Nos. 3 and 4, 1899; tome IX., Nos. 1 to 4, 1899.

Paris—Feuilles des Jeunes Naturalistes, Nos. 344, 345, 347, 348, 349 to 352, 354 to 356, 358, 359.

Paris—Bibliothèque—List of Works and Memoirs, Malacological.

—— Société Entomologuique, Bulletin, Nos. 7 and 8, 13 to 21, 1899; Bulletin, Nos. 1 to 14, 1900; Bulletins, 1897-98; Annales, tome LXVI., pts. 1 to 4; ditto, tome LXVII., pts. 1 to 4.

—— L.'Institut Botanico-Geologuique Colonial de Marseilles; Annales, vol. V., 1898.

GREAT BRITAIN AND IRELAND.

Belfast—Belfast Natural History and Philosophical Society, Report and Proceedings, 1898-99.

Cambridge—Philosophical Society, Proceedings years 1843 to 1899 being parts 1 to 17; vol. III., pt. 1 to vol. V., part 6; vol. VI., pt. 1; vol. X., pts. 4, 5, and 6.

—— Fauna Hawaiiensis, vol. I., pt. 2, Macrolepidoptera; vol. II., pt. 1, Orthoptera; vol. II., pt. 2, Neuroptera; vol. II., pt. 3, Coleoptera I.

Dublin—Royal Dublin Society, Proceedings, vol. IX., pts 1 and 2, 1900; Index, 1877-98; Transactions, vol. VII., pts. 2 to 7.

—— Royal Irish Academy, Proceedings, vol. V., Nos. 2 to 5.

Edinburgh—Royal Physical Society, Proceedings Sessions 1897 to 1899.

—— Royal Society of Edinburgh, vol. XXII., Sessions 1897 to 1899.

London—Royal Microscopical Society, Journal, pts. 4 to 6, 1899; ditto, pts. 1 to 3, 1900.

—— Royal Society Year-Books, 1899 and 1900, vol. LXV., Nos. 413 and 414, 418 to 423; vol. LXVI., Nos. 424 to 434.

—— Report of the Committee of the Royal Society of London, with Schedule of Classification; Report of the 2nd International Conference on a Catalogue of Scientific Literature; Reports to Malarial Committee, July, 1900.

—— Linnean Society, Proceedings, 111th Session, November, 1898, to June, 1899.

—— Royal Colonial Institute Journal, vol. 31, pt. 5, No. 5, 1899-1900.

—— Entomological Society, Transactions, vol. for 1899.

—— British Museum, Catalogue Lepidoptera Phalænæ vol. I. Hand list Genera and Species Birds, vol. I.

London—The Royal Geographical Society Journal, vol. XII., No. 6; vol. XIII., No. 1; vol. XV., No. 2.

Leeds—Journal of Conchology, vol. IX., Nos. 6 to 9.

Manchester—Manchester Literary and Philosophical Society, Memoirs and Proceedings, vol. XLIII., Nos. 1, 2, 4, 5; vol. XLIV., Nos. 1 to 4.

——— Manchester Field Naturalists and Archæologists' Society, Reports and Proceedings for 1899.

——— Manchester Geological Society, vol. XXVI., pts. 4 to 16, 1899-1900.

Truro—Royal Institution of Cornwall Journal, vol. XIII., pts. 2 and 4.

INDIA.

Madras—Government Museum, Bulletin, vol. III., Nos. 1 and 2.

Calcutta—Indian Museum—Notes, vol. IV., pts. 4, 5, and 6; vol. V., pt. 1.

——— Royal Indian Marine Survey Ship "Investigation;" Deep Sea Brachyura, 1899; Descriptive Catalogue Indian Deep Sea Fishes; Illustrations of Shallow Water Ophiuroidea.

ITALY.

Florence—Società Entomologica Italiana, Bullettino Trimestre, I., II., III. et IV.

——— Società Toscana di Scienze Naturali, vol. XI., Nov., 1898, to May, 1899.

Milan—Società Italiana Scienze Naturali, vol. XXXVIII., Fasc. 3 and 4; vol. XXXIX., Fasc. 1.

Palermo—Scienze Naturali Ed. Economicke Giornale, vol. XXII., Anno., 1899.

Pisa—Società Toscana di Scienze Naturali, Processi Verbali, vols. XI. and XII.

Turin—Museo di Zoologia ed Anatomia Comarata della R. Univer. di Torina, Bullettino, vols. XIV. and XV., Nos. 335 to 366.

JAPAN.

Tokio—Asiatic Society, Transactions, vol. XXIV., Supplement, vol. XXVI., 1898; vol. XXVII., pts. 1 to 4, and Supplement.

——— College of Science, Imperial University Journal, vol. XIII., pts. 1 and 2; Calendar, 1899-1900; Journal, vol. XI., pt. 4; vol. XII., pt. 4.

Java.

Batavia—Natuurkundig Tijdschrift, deel LIX., 1900.

Norway and Sweden.

Christiana—Den Norske Nordhans Expedition, vol. XXV., XXVI., and XXVII.

Stockholm—Geologiske Föreningens, Transactions, Bd. XXI. and XXII.; Proceedings, Bd. XXII.; General Register, vol. XI. to XXI., of Proceedings.

——— Entomologisk Tidschrift, arg. 20, tiäft 1 to 4.

——— Kongl. Vitterhets Hist. Antiquitits Akad., Catalogue Musée des Antiq. Nat.; Antiquarisk Tidschrift, vol. XIV., pt. 1.

Stavanger—Museum, Year-Book, 1898.

Upsala—University of Upsala, Bulletin Geological Institution, vol. IV., pts. 1 to 8.

Russia.

Kiew—Society of Naturalists, vol. XVI., pt. 1, &c.

Moscow—Société Impériale des Naturalistes, Year-Book, 1898 and 1899, tome XVI., pt. 2; New Memoirs, vols. XV. and XVI.

St. Petersburg—Société Impériale Mineralogique Annual, 1898, pt. 4, vols. XXXVI. and XXXVII.; vol. XIX., Geology Russlands; Hand-Book, XXXVI., vol., 2nd Series.

——— Comité Geologique, vol. XVII., Nos. 6 to 10; vol. XVIII., Nos. 1 and 2, 8 to 10; Memoirs, vols. VIII., IX., XII., and XV.

——— Academie Impériale des Sciences, Memoirs Class Phys.-Mathem., vol. VII., Nos. 1 to 4; vol. VIII., Nos. 1 to 5; vol. IX., Nos. 1 to 5; vol. X., Nos. 1 to 4; vol. VI., Nos. 9, 11, 12, and 13; Hist.-Phil., vol. III., Nos. 2 to 5.

Helsingfors—Der Geographische in Finland, Maddilangen, Finlands, V.

Switzerland.

Lausanne—Société Vaudoise des Sciences Naturelles, Bulletin, vol. XXXIV., No. 128; vol. XXXV., Nos. 132 to 134; vol. XXXVI., Nos. 135, 136.

Neuchatel—Société des Science Naturelles. Tomes XXII., XXIII., XXIV., and XXV.

Sandwich Islands.

Honolulu—The Bernice Pauahi Bishop Museum of Nat. Hist. and Polynesian Ethnology.
——— Memoirs, Vol. I., No. 1.
——— Occasional Papers, vol. I., No. 1.

South and Central America.

Mexico—Sociedad Cientifica, tomo XI., Nos. 5 to 8; tomo XII., Nos. 1 to 12; tomo XIV., Nos. 1 and 2. Instituto Geológico, Boletin, Nos. 11 to 13.
Monte Video—Museo Nacional, Annales tomo II., Fasco. 11; Tomo, III., Fasco. 9 and 13.
——— Memoria presented to Legislature, 1899-1900.
Rio de Janeiro—Observatoria, Boletim Mensal, Abril and Marco de 1900.
Sao Paulo, Brazil—Museu Paulista; Revista, vol. IV.

South Africa.

Cape Town—South African Phil. Soc., Transactions, vol. XI., pt. 1, 1900.
——— South African Museum Annals, vol. I., pts. 1, 2, 3; Annals, vol. II., pts. 1, 2.

United States of America.

Baltimore—John Hopkins University Studies, Hist.-Polit. Science, series XVII., Nos. 1 to 12; Hist.-Polit., series XVII., Nos. 6 to 12; Hist.-Polit., series XVIII., Nos. 1 to 4; John Hopkins University Circulars, vol. XIX., Nos. 142, 143.
——— American Chemical Journal, vol. XXI., 6; XXII., 1 to 6; XXIII., 1 to 3.
Botson—Boston Society of Nat. Hist., Proceedings, vol. XXVIII., Nos. 13 to 16; vol. XXIX., 1 to 8; Memoirs, vol. V., 4 and 5.
——— American Academy of Arts and Sciences, Proceedings, vol. XX., 4 to 10; vol. XXI., 1 to 5; vol. XXXIV., 8 to 23; vol. XXXV., 1 to 22.
Buffalo—Society of Nat. Sciences, Bulletin, vol. VI., 2 to 4.
Cambridge—Museum of Comparative Zoology at Harvard College, Annual Rep., 1898-99, Bulletins, vol. XXXII., 10, vol. XXXIII., Island, &c., Fiji; vol. XXXIV., Jamacia; vol. XXXV., 3 to 8.
Cincinnati—Society of Natural History, Journal, vol. XIX., Nos. 5 and 6.

Champaign, Illinois—State Laboratory of Nat. Hist., Bulletin, vol. II., Art. 2 and 5 to 8; vol. III., Art. 1 to 12; Bulletin, 1 and 2 (Bloomington, Ill.).

Chicago—Field Columbian Museum, Publications 39 to 44; Geological Series, vol. I., 3 to 6; Zoological Series, vol. I., 11 to 15.

——— Water Birds of N.E. America, pt. 1; Land Birds of N.E. America, pt. 2.

——— Academy of Science, Annual Rep., No. 40, 1897, Bulletin, No. 2.

Columbus—American Assoc. for the Advancement of Sc., Proceedings, Anniversary, 1899.

Granville—Scientific Laboratories, Denison University, Bulletin, vol. XI., Art. IV. to VIII.

Lawrence—Kansas University, Quarterly, vol. VIII., 1 and 4.

Massachussets—Tufts' College Studies, No. 6, Science Series.

Milwaukee—Wisconsin Nat. Hist. Soc., vol. I., 1 and 2. pp. 1 to 246.

New York—Academy Sciences Charter, Memoirs, vol. II., pt. 1; the Devonian Lamprey, Annals, vol. XII., 1 to 3.

——— Public Library, Bulletin, vol. II., 8; vol. III., 8 to 12; vol. IV., 1 to 8, and Hand-Book.

——— Life of Sam. Wells Williams, LL.D.

——— American Math. Society, Transactions, vol. I., 1.

Philadelphia—Academy of Nat. Sciences, pt. 3, 1898; pts 1, 2, and 3, 1899; pt. 1, 1900.

——— University of Pennsylvania, Contributions, vol. II., No. 1.

——— "American Trade with Siam."

Sacramento—Californian Mining Bureau, Bulletin, No. 16.

Salem—Essex Institute, Bulletin, vol. XXVIII., Nos. 7 to 12; ditto, vol. XXIX., Nos. 7 to 12; ditto, vol. XXX., Nos. 1 to 12.

San Francisco—Californian Academy of Sciences, Proceedings, Zoology, vol. I., 6 to 12; ditto, Geology, vol. I., 4 to 6; ditto, Botany, vol. I., 3 to 9; ditto, Math.-Phys., vol. I., 1 to 4; Occasional Papers, No. VI.

St. Louis—Missouri Botanic Gardens, Tenth Annual Report.

——— Academy of Science, vol. IX., Nos. 1 to 5, and 7 to 12.

Urbana, Illinois—State Laboratory of Nat. Hist., Bulletin, vol. III., 1887-1895, Index, &c.; vol. V., Arts. 1 to 10, Index to vol. I.

Washington—Nat. Acad. of Sciences, Memoirs, vol. IV., pts. 1 and 2; vol. VIII., 1898, 3 and 4, 1899; 18th Annual Rep., pts. 1 to 5, and 5 (continued); 19th Annual Rep., pts. 1 to 6, and 6 (continued), Atlas; 20th Annual Rep, pts. 1 to 6, and 6 (continued); Monographs, vols. XXIX., XXXI., with Atlas, XXXII., pt. 2., XXXIII., XXXIV., XXXV., XXXVI., XXXVII., XXXVIII.

——— Geological Atlas, fol. 1 to 19, 21 to 37.

——— Eureka Dist., Nevada, Marquette Iron-bearing Dist., Michigan, Bulletin, Nos. 150 to 162, 1898.

——— Department of Agriculture—North America, Fauna, 14, 15, and 17; Year-Book, 1898, Bulletin (Biol.), No. 12, Protection of Birds.

——— Smithsonian Institution, Proceedings, vol. XXI.; Annual Rep. Board of Regents, to June, 1897.

——— Academy of Science, Proceedings, vol. I., pp. 111 to 251, and 253 to 339; ditto, vol. II., pp. 1 to 246.

LIST OF FELLOWS, MEMBERS, &c.

DECEMBER, 1900.

Those marked (F) were present at the first meeting when the Society was founded. Those marked (L) are Life Fellows. Those marked with an asterisk have contributed papers published in the Society's Transactions.

Date of Election.

HONORARY FELLOWS.

1893. *COSSMANN, M., Rue de Maubeuge, 95, Paris.
1897. *DAVID, T. W. EDGEWORTH, B.A., F.G.S., Professor of Geology, Sydney University.
1888. *DENNANT, JOHN, F.G.S., F.C.S., Inspector of Schools, Stanhope Grove, Camberwell, Melbourne, Victoria.
1876. ELLERY, R. L. J., F.R.S., F.R.A.S., Government Astronomer, The Observatory, Melbourne, Victoria.
1890. *ETHERIDGE, ROBERT, Director of the Australian Museum of New South Wales, Sydney.
1893. GREGORIO, MARQUIS DE, Palermo, Sicily.
1855. HULL, H. M., Hobart, Tasmania.
1892. *MAIDEN, J. H., F.L.S., F.C.S., Director Botanic Gardens, Sydney, New South Wales.
1899. *MEYRICK, E. T., B.A., Ramsbury, Hungerford, Wiltshire, England.
1876. RUSSELL, H. C., B.A., F.R.S., F.R.A.S., Government Astronomer, Sydney, New South Wales.
1894. *WILSON, J. T., M.D., Professor of Anatomy, Sydney University.

CORRESPONDING MEMBERS.

1881. BAILEY, F. M., F.L.S., Colonial Botanist, Brisbane, Queensland.
1887. *CLOUD, T. C., F.C.S., Manager Wallaroo Smelting Works, South Australia.
1880. *FOELSCHE, PAUL, Inspector of Police, Palmerston, Northern Territory, Australia.
1886. NICOLAY, REV. C. G., Fremantle, Western Australia.
1883. *STIRLING, JAMES, Government Geologist, Victoria.
1893. *STRETTON, W. G., Palmerston, Northern Territory.

FELLOWS.

1887. ADCOCK, D. J., Adelaide, South Australia.
1874. ANGAS, HON. J. H., Adelaide, South Australia.
1895. *ASHBY, EDWIN, Adelaide, South Australia.
1887. BAGOT, JOHN, Adelaide, South Australia.
1893. *BEDNALL, W. T., Adelaide, South Australia.
1887. *BLACKBURN, REV. THOMAS, B.A., Woodville, South Australia.
1886. *BRAGG, W. H., M.A., Professor of Mathematics, University of Adelaide.

1883. *Brown, H. Y. L., F.G.S., Government Geologist, South Australia.
1882. Browne, L. G., Adelaide, South Australia.
1899. Browne, T. L., Adelaide.
1898. *Browne, J. Harris, North Adelaide.
1893. Brummitt, Robert, M.R.C.S., Kooringa, South Australia.
1879. *Cleland, W. L., M.B., Ch.M., J.P., Colonial Surgeon, Resident Medical Officer Parkside Lunatic Asylum, Lecturer on Materia Medica, University of Adelaide, Parkside, South Australia.
1895. Cleland, John B., M.B., Ch.B. Syd., Parkside, South Australia.
1876. (L) Cooke, E., Commissioner of Audit, Adelaide, South Australia.
1895. Cooke, John H., Adelaide, South Australia.
1887. *Dixon, Samuel, Adelaide, South Australia.
1896. Drummond, J. H. G., M.D., Moonta.
1893. Dudley, Uriah, White Rock, S.M., Drake, New South Wales.
1890. *East, J. J., F.G.S., 3, Parade, Norwood.
1899. Ferguson, Andrew, Agricultural School, Adelaide.
1886. Fleming, David, Adelaide, South Australia.
1882. Fowler, William, Melton, Yorke Peninsula, South Australia.
1889. Fraser, J. C., Adelaide, South Australia.
1880. *Goyder, George, F.C.S., Government Analyst, South Australia.
1887. Grasby, W. C., F.L.S., Adelaide, South Australia.
1896. Greenway, Thomas J., East Adelaide.
1896. Hawker, E. W., F.G.S., Metallurgist and Assayer, Adelaide.
1899. *Higgin, A. J., Assistant Lecturer Chemistry, University, Adelaide.
1891. *Holtze, Maurice, F.L.S., Director Botanic Gardens, Adelaide, South Australia.
1883. *Howchin, Walter, F.G.S., Goodwood East, South Australia.
1899. Hughes, Samuel, B.Sc., Registrar of the School of Mines, Adelaide.
1893. James, Thomas, M.R.C.S., Moonta, South Australia.
1900. Johncock, C. F., Wilmington.
1853. (F) Kay, Robert, General Director and Secretary South Australian Public Library, Museum, &c., Adelaide.
1899. Kleeman, Richard, Rowlands Flat.
1899. *Koch, Max, Adelaide.
1884. Lendon, A. A., M.D., Lond., M.R.C.S., Lecturer on Forensic Medicine, and on Chemical Medicine University of Adelaide, Honorary Physician Children's Hospital, North Adelaide, Adelaide, South Australia.
1856. Lloyd, J. S., Adelaide, South Australia.
1897. *Lea, A. M., Government Entomologist, Hobart, Tasmania.
1888. *Lower, O. B., F. Ent. S., Broken Hill, N.S. Wales.
1874. Mayo, G. G., C.E., Adelaide, South Australia.
1888. Molineux, A., F.L.S., Secretary Central Agricultural Bureau, Kent Town, South Australia.
1897. *Morgan, A. M., M.B., Ch.B., Angas-street, Adelaide.
1884. Munton, H. S., Brighton, South Australia.
1859. (L) Murray, Hon. David, Adelaide, South Australia.
1896. *Parker, Thomas, C.E., Rockhampton, Queensland.

1883. PHILLIPS, W. H., Adelaide, South Australia.
1886. POOLE, W. B., Adelaide, South Australia.
1892. *PRIESTLEY, P. H., Unley-road, Parkside.
1885. *RENNIE, EDWARD H., M.A., D.Sc., London, F.C.S., Professor of Chemistry University of Adelaide.
1876. *RUTT, WALTER, C.E., Adelaide, South Australia.
1891. SELWAY, W. H., Adelaide, South Australia.
1893. SIMSON, AUGUSTUS, Launceston, Tasmania.
1857. SMEATON, THOMAS D., Blakiston, Littlehampton, South Australia.
1900. SMEATON, STIRLING, B.A., Adelaide.
1871. SMITH, ROBERT BARR, Adelaide, South Australia.
1887. *STIRLING, EDWARD C., C.M.G., M.A., M.D., F.R.S., F.R.C.S., Professor of Physiology University of Adelaide, Honorary Director South Australian Museum, Adelaide, South Australia.
1876. *TATE, RALPH, F.G.S., Professor of Natural Science University of Adelaide.
1886. *TEPPER, J. G. O., F.L.S., Entomologist South Australian Museum, Adelaide, South Australia.
1897. *TORR, W. G., LL.D., M.A., B.C.L., Way College.
1894. *TURNER, A. JEFFERIS, M.D., Brisbane.
1889. VARDON, HON. JOSEPH, M.L.C., J.P., Adelaide, South Australia.
1878. *VERCO, JOSEPH C., M.D., F.R.C.S., Lecturer on the Principles and Practice of Medicine and Therapeutics University of Adelaide, Adelaide, South Australia.
1883. WAINWRIGHT, E. H., B.Sc., St. Peter's College, South Australia.
1878. WARE, W. L., J.P., Adelaide, South Australia.
1859. WAY, RT. HON. SIR SAMUEL, Bart., D.C.L., Chief Justice and Lieutenant-Governor South Australia, Adelaide, South Australia.
1886. *ZIETZ A., F.L.S., C.M.Z.S., Assistant Director South Australian Museum, Adelaide, South Australia.

APPENDICES.

FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia.

SEVENTEENTH ANNUAL REPORT OF THE COMMITTEE.

Being for the Year Ending September 30th, 1900.

Evening Meetings.—Nine evening meetings have been held, of which the following is a list:—

1899.

Oct. 17—"The Fertilization of Flowers," Mr. S. Smeaton, B.A.

Nov. 21—Reports of Excursion to Port Victor. Various members.

1900.

March 20—Particulars of Science Congress held at Melbourne in January, 1900. Messrs. M. S. Clark and S. Smeaton, B.A.

April 24—Results of Easter Encampment of Boys' Field Club, Port Noarlunga. Mr. E. Ashby.

May 15—"How Plants Live and Grow," Mr. J. G. O. Tepper, F.L.S.

June 19—"Seeds and their Distribution," Mr. S. Smeaton, B.A.

July 17—"The Structure of Shell Fish," Mr. R. J. M. Clucas.

Aug. 21—"The Leaves of Plants," Miss E. F. Haycraft, B.Sc.

Sept. 18—Annual Meeting, Chairman's Address, "Australian Birds," Mr. E. Ashby.

The attendance at these meetings has been well sustained, being greater than the usual average, and almost as high as for any year during the last decade. A special feature has been a course of papers on Structural Botany. In addition to the seeds and leaves of plants, the chemistry of their growth and the question of fertilization have been dealt with.

Other points are to be touched upon in subsequent addresses.

As a change from botany, one paper treateed of the structure of Mollusca, and at the Annual Meetiug the Chairman took up the subject of birds, which has not occupied much attention with us since the inception of the Ornithological Association. Exhibits have, as usual, covered a wide range in Natural History, and have formed an interesting feature of these meetings.

Excursions.—Twelve excursions have been held during the year as under:—

1899.

Oct. 7—Happy Valley.
Oct. 21—Agricultural College.
Nov. 11-13—Port Victor, &c. (three days).
Dec. 9—Glen Stuart (Morialta Waterfalls), via Norton's Summit.

1900.

March 17—Dredging, Port River.
May 19—Grange and Semaphore Beach.
June 16—Brighton.
" 23—"Rostrevor," Magill.
July 26—Black Hill.
Aug. 18—Stonyfell.
Sept. 3—Golden Grove (whole day).
" 22—National Park (Waterfall Gully portion).

These excursions have covered a wide area, and have given opportunity for the study of most branches of Natural History, Geology, Botany, Zoology (both land and marine), Conchology, and Entomology having been included in the scope of the investigations. The most conspicuous feature of these excursions was a three days' visit to Port Victor and neighbourhood in November, 1899, when about 30 members and friends spent a pleasant and profitable time at that favourite seaside resort.

Several kinds of plants not to be seen in the hills near Adelaide were then gathered, while 53 species of birds were identified, and chitons and other marine specimens obtained. An attempt was made to find Selwyn's historic Rock in the Inman River, but its identity could not be clearly established, although the outcrop recorded in its vicinity was found. It was supposed that the rock in question has been covered up since its re-discovery by Professor T. W. E. David and Mr. W. Howchin, F.G.S., in 1897. The excursion to the foot hills west of Golden Grove introduced a new locality for these outings, and brought a somewhat distinct character of vegetation under

notice. Successful results were obtained from the excursions to Happy Valley and Black Hill, whilst fresh ground was traversed at some of the more familiar destinations. A visit to the Agricultural College at Roseworthy, and to the Estate of "Rostrevor," Magill, lent pleasing variety to the ordinary expeditions of the Section. A dredging trip was held, as usual, during the year. At some of the excursions the Boys' Field Club joined forces with the Section, and these combined outings were, it is hoped, mutually profitable.

The attendance at the excursions shows continued interest in this part of the Section's operations, and at the last outing there were more than 30 members and friends present.

Fauna and Flora Protection Committee.—A separate report is presented from this Committee, and shows that the question of Legislation for the Protection of Birds is still receiving earnest attention.

Melbourne Science Congress.—Several members of the Section attended the meetings of the Australasian Association for the Advancement of Science held at Melbourne in January, 1900. Some of the important papers then read, and of the excursion then arranged were subsequently brought under the notice of the members of this Section at the evening meetings.

Proposed 19th Century Festival of Literature, Science, and Art.—Representatives of this Section were appointed on the Committee for this proposed celebration, but after several meetings had been held it was decided to abandon the scheme. In anticipation of this gathering being held, no conversazione was arranged for last year in connection with the Section.

Proceedings.—Beyond the report issued with the Royal Society's Transactions, no printed account of last year's proceedings has yet been published, but it is hoped ere long to combine that and the present year's report in one volume.

Library.—During the year it was decided to establish a lending library in connection with the Section, the nucleus having been presented by Mr. T. D. Smeaton, and members have been asked to donate suitable works for the Library. Your Committee would take this opportunity of again reminding members that they have access, so far as reference is concerned, to the Royal Society's Library, which, it may be mentioned, is now being catalogued.

Membership.—There has not been so large an acquisition of new members during the year as might be wished. Your Committee hope that members will endeavour to induce their friends to join the Section, and so help to counter-

balance the loss that is always to be expected. The number now on the roll is 90.

Financial.—The receipts from subscriptions (£17) have considerably exceeded the disbursements (£8/9). Only £10 has been received in the way of grant from the Royal Society.

EDWIN ASHBY, Chairman.
W. H. SELWAY, Hon. Sec.

Adelaide, Sept. 17, 1900.

TWELFTH ANNUAL REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE OF THE FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA TO BE PRESENTED AT THE ANNUAL MEETING, 18TH SEPTEMBER, 1900.

The Committee have met at intervals in the past year.

Regarding the Forest Reserves, the Committee received, in October last, a letter from the Commissioner of Crown Lands informing them "that all land recommended by the Conservator of Forests to be retained for forest culture is so retained, and wherever suitable land is available it will be set apart for the purpose." Information was however, recently received from Wirrabara that a perpetual lease of 277 acres in the forest had been granted to one man, and at the request of the Secretary, Mr. John Darling, M.P., asked in Parliament some questions of the Commissioner on the subject, receiving the reply that all Forest Reserves were preserved that were worth preserving.

The Birds' Protection Bill referred to in our last report, having lapsed, has been this year re-introduced by Mr. Playford, but in a different form.

The Committee were disposed to join the Bird Protection Society in asking that the Bill should be withdrawn, as many important provisions contained in their own Bill, upon which this one had been founded, were omitted from it. Two of the members waited upon Mr. Playford with this end in view, but, after discussing the question with him, thought it would be better to allow the Bill to go on, and endeavour later to get introduced some amendments to meet their own views. So little progress has, however, been made that there seems little probability of the Bill being passed this session.

EDWIN ASHBY, Chairman.
M. SYMONDS CLARK, Hon. Secretary.

Adelaide, September 18, 1900.

FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1899-1900.

DR. RECEIPTS.	£	s.	d.	CR. DISBURSEMENTS.	£	s.	d.
To Balance brought forward	4	3	5	By Printing	3	4	0
" Subscriptions	17	0	0	" Postages and Sundries	4	2	6
" Grant from Royal Society	10	0	0	" Attendance	1	2	6
					8	9	0
				" Subscriptions forwarded to Royal Society ...	17	0	0
				" Balance in hand	5	14	5
	£31	3	5		£31	3	5

Audited and found correct,

J. W. BUSSELL, }
J. S. LLOYD, } Auditors.

Adelaide, 17th September, 1900.

W. H. SELWAY,
Hon. Secretary and Treasurer.

ASTRONOMICAL SECTION

OF THE

Royal Society of South Australia.

EIGHTH ANNUAL REPORT.

The Committee have to report that the Section has held six ordinary meetings during the past year, and subjects of interest have been discussed, such as meteors, sun spots, &c. Some of our members kept watch for the Leonid showers in November last. Mr. Russel gave a popular lecture, entitled "An Astronomical Evening," illustrated by lantern views, at the Society's room, to a good attendance. In June the President, Sir Charles Todd, gave an interesting paper on "The Sun and its Eclipses," illustrated by elaborately prepared diagrams, which he repeated (by request) for the benefit of the general public a few weeks later at the Royal Society's Room, at which there was also a large attendance.

The Committee have met six times for business. The Section now has three English magazines, which treat of astronomical subjects, and members can obtain them for perusal on application to Mr. Hurst, office of the Postmaster-General, Adelaide.

The "Astronomical Notes"—published monthly sinec July, 1892, and consequently now in their ninth year—have appeared with consistent regularity during the past year, and, as formerly, have proved of a highly satisfactory nature.

The question box is still open to enquirers.

Adopted at the annual meeting of the Section, held at the Adelaide Observatory on the evening of Tuesday, September 11, 1900.

C. Todd, President.
W. E. Cheesman, Hon. Secretary.

ASTRONOMICAL SECTION OF THE ROYAL SOCIETY, S.A.

Balance Sheet for Year 1899-1900.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Balance, 1899 ...	29	7	10	By Subscriptions paid to Royal Society ...	9	2	6
" Subscriptions Received ..	9	2	6	" Advertisements ...	0	17	6
" Interest ...	0	16	7	" Postage ...	3	2	0
				" Printing "Monthly Notes" ...	2	4	0
				" Lantern, &c. ...	1	2	6
				" Caretaker Royal Society's Rooms ...	0	5	0
				" Rubber Stamps...	0	10	6
				" Magazines ...	2	12	5
				" Minute Book ...	0	4	9
				" Stationery and Printing ...	0	14	6
				" Balance ...	18	11	3
	£39	6	11		£39	6	11

Read at Annual Meeting held 11th September, 1900, and adopted.

C. TODD, President.

W. E. CHEESMAN, Hon. Sec.

Audited and found correct, 10/9/00.

RICHARD F. GRIFFITHS.

GENERAL INDEX.

[Generic and specific names in italic type are described as new.]

Aborigines, Australian, factors producing uniformity of type among, 176.
Acanthiza *tenuirostris*, 112.
Acrilla *minutula*, 95.
Agriophora nodigera, 11.
Alcides *terræreginæ*, 141.
Aldinga Bay, geological notes on, 1.
Anacheirotus inornatus, 39.
Anoplognathus *concinnus*, 40.
Anthribidæ, tabulation of Genera of, 141.
Aæcerodes lilliputans, 167.
Aræocerus *asperulus*, 166; *bicristatus*, 163; Koebeli, 164; *lindensis*, 165; sambucinus, 165.
Ardiosteres *Scoteina*, 18.
Ashby, Edwin, Definitions of two new species of Polyplacophora, 86.
Aulicus *amabilis*, 133; *crœsus*, 127; *cribatus*, 134; *delicatulus*, 132; *dives*, 128; *eremita*, 133; instabilis, 129; *modestus*, 135; *mundus*, 131; *nigro-hirtus*, 129; *robustus*, 131; tabulation of species of, 125.
Australian Aborigines, features producing uniformity of type among, 176.
Baris *orchivora*, 61.
Basitropis *pallida*, 156; *relicta*, 154.
Bird-skins from Kalgoorlie, W.A., 24.
Blackburn, Rev. T., Further Notes on Australian Coleoptera, XXVI., 35; XXVII., 113.
Bruchis diversipes, 63; fabæ, 64; *lyndhurstensis*, 62; *Oodnadattæ*, 63; *persimulans*, 64; pisi, 64; quornensis, 63.
Cacephatus sericeus, 151.
Cadulus *spretus*, 102.
Callirrhipis ruficornis, 50.
Callithauma basilica, 15.
Callochiton *rufus*, 87.
Calochromus *cucullatus*, 56, *rostratus*, 58; simillimus, 56.
Cantharus *Kingicola*, 91.
Carditella *delta*, 102; *pectinata*, 103.
Cassida profunde-striata, 169.
Cephalodesmius armiger, 37; *minor*, 36.
Chalcopterus *Kochi*, 59.
Chione *Hallii*, *Kergueleni*, *permagna*, 107.
Chiton *oruktus*, 89.
Chrosis *angusticollis*, 114.
Chryoryctis *ochroxantha*, 19.
Clark, E. V., Geological Notes on Aldinga and Myponga Bays, 1.
Cleland, Dr. W. L., Presidential Address, 176.
Cleptor *Haroldi*, 168.
Cleridæ, tabulation of Australian genera, 117.
Cleromorpha, 122.
Clerus *delicatatus*, 132; Notes on species of, 121.
Clivina Adelaidæ, *Eyrensis*, obliquata, 35.
Coleoptera, Australian, new genera and species of, 35; 113.
Cryptophaga bateata, opalina, 7.
Cyamium *mactroides*, 102.
Cyclostrema *porcellana*, 101.
Cylothorax cordicollis, peryphoides, 36.
Cyperus castaneus, 84.
Dennant, J., List of Eocene Corals from Mulgundawa, S.A., 111.
Donations to the Library, 186.
Donovania *fenestrata*, 94.
Doticus *æqualipennis*, 162.
Eburiphora patricius, 138.
Edusa *angustula*, 66.
Enaemia dives, *mixoleuca*, 14.
Ennometes ruficornis, 50.
Entromus dorsoplagiatus, 146.
Eocene beds at Aldinga and Myponga Bays, 1; at Mulgundawa, 109.
Epargemus marmoratus, 147.
Enspondus bigibbosus, 149.
Eschatura lemurias, 11.
Eucorynus *Mastersi*, 144.
Eulima *inflata*, 95; *Mayii*, 96; *Tryoni*, 96.
Evaniocera *persimilis*, 60; *perthensis*, 61.
Fossiliferous rocks at Kerguelin Island, 104.
Fossils, Eocene, list of at Mulgundawa, S.A., 111.
Gari (?) sp., 105.
Geological Notes on Aldinga and Myponga Bays, 1; on Kerguelin Island, 104; Mulgundawa-bore, 109.
Glaciation in Southern Yorke-Peninsula, 71.
Goyder, G. A., Description of a new mineral (*Sulvanite*): 69.
Gracilaria *albicincta*, 20; laciniella, 19; leptalea, 21; ophiodes, 20; parallela, 19; polyplaca, 20; tristaniæ, 20.
Hall, Robert, Notes on Bird-skins from Kalgoorlie, 24; on the Geology of Kerguelin Island, 104.
Heteronyx *grandis*, 113; *unicus*, 38.
Howchin, W., Evidences of Glaciation in Southern Yorke-Peninsula, 71.
Hydnocera, 139.
Hypocilibe *veternosa*, 140.
Ischnochiton *pallens*, 86.
Kalgoorlie, Bird-skins from, 24.
Kerguelin Island, marine fossiliferous rocks at, 104.
Koch Max, Supplementary List of Plants from Mount Lyndhurst Run, S.A., 81.
Labroma horrens, 37.
Lacon *farinensis*, Victoriæ, 49.
Lampusia *nodocostata*, 90.
Leioprora ascepta, 22.
Lichenaula *amblygona*, 9; inscripta, 9; *tholodes*, 10.
List of Fellows, &c., 196.
Lozostoma *asema*, 23.
Marginella *biplicata*, 92; *cratericula*, 91; *Mayii*, 93; *multiplicata*, 91; *ovulæformis*, 93; *Simsoni*, 92.
Maroga mythica, 10.
Maughan, M. M., Definition of a new species of Polyplacophora, 89.

May, W. L., and Prof. Tate, Definition of new species and genera of Australian Mollusca, 90.
Megasceloides *circumcinctus*, 65.
Metriorrhynchus atratus, 52; *cliens*, 53; *eremita*, 55; *flagellatus*, 53; hæmorrhoidalis, 56; *insignipennis*, 52; *mentitor*, 54; *miles*, 54; *paradoxa*, 55; rufipennis, 56; semicostatus, 51.
Micro-Lepidoptera, new species of, 6.
Misthosima *dorsonotata*, 161.
Mollusca, Australian, new species of, 86, 89, 90.
Mount Lyndhurst Run, list of plants from, 81.
Mulgundawa, well-section at, 109; list of fossils from, 111.
Myponga Bay, Geological Notes on, 1.
Mytilus spp., 108.
Nacella *Tasmanica*, 102.
Natalis *debilis*, 120.
Natica *Tenisoni*, 94; *Tremarici*, 106.
Nemophora *iolampra*, 17; leptosticta, 16.
Neocles *innocuus*, 169.
Neolycaon, 49.
Neoscrobiger patricius, 136; *rauciceps*, 137.
Notolipernes, 68.
Notœcia reticulata, 160.
Ocnodus *lepidus*, 38.
Odontostomia *deplexa*, *varians*, 97.
Opilo mœrens and spp., 119.
Opostega *nubifera*, 23.
Ornix *acrobaphes*, 22; *trigonophora*, 21.
Parasaphes *bicolor*, 115; *quinquesulcatus*, 114.
Pedois cosmopoda, 12; eurnorpha, 12; humerana, 12; neurosticha, 12; rhodomita, 13; tripunctella, 12.
Peritornenta circulatella, stigmatias, thyellia, 14.
Pilostibes *trachyptera*, 6.
Plants from Mount Lyndhurst Run, list of, 81.
Platyphymatia squalidus, 38.
Polyplacophora, new species, 86, 89.
Presidential Address by Dr. W. L. Cleland, 176.
Proceedings, Abstract of, 170.
Procometis hylonoma, 11.
Pseudorissoina Tasmanica, 98.
Pseudotortrix acosma, 15.
Pylus anthicoides, 140.
Rhipidocera mystacina, 50.
Rissoia *apicilirata*, 99; *demessa*, 98; *discrepans*, 99; *pellucida*, 100; *perexigua*, 100; *rubicunda*, 100; *Simsoni*, 100.
Rissopsis *buliminoides*, *consobrina*, 101.
Rupilia angulaticollis, 66; approximans, 67.
Scalaria *minutula*, 95.
Scorpiopsis superba, 14.
Scrobiger, 136.
Selenurus *fernshawensis*, 115.
Stathmopoda *mannophora*, 23.
Stenochiton *pallens*, 86.
Stigmodera acuminata, 41; addenda, 42; biguttata, 41; bucolica, 42; campestris, 41; capucina, 44; carinata, 44; Caroli, 44; Carpentariæ, 43; cincta, 47; coerulea, 44; colorata, 41; consularis, 42; crocipennis, 42; dawsonensis, 42; *dulcis*, 41; elegans, 48; elegantula, 44; filiformis, 47; flavescens, 44; flavipennis, 47; *insignicollis*, 45; insignis, 46; Karattæ, 43; laudabilis, 41; mansueta, 42; obesissima, 47; ocularis, 42; ostentatrix, 43; Pascoei, 44; placens, 42; plagiata, 44; *quadrifasciata*, 46; *rubriventris*, 46; rubrocincta, 47; rugosipennis, 43; sensitiva, 41; *subgrata*, 41; tacita, 42; tasmanica, 42; terræ-reginæ, 41; triangulosa, 41; verax, 41; vigilans, 42.
Streneoderma contemptum, 158; *planatum*, 157.
Stylifer *Petterdi*, 96.
Sulvanite, a new mineral, 69.
Syrnola *Harrissoni*, 96; *Petterdi*, 97; *punctospira*, 97.
Tarsotenodes simulator, 139.
Tarsostenus spp., 138.
Tate, Prof. R., Definitions of new species and genera of Australian Mollusca, 90; Marine fossiliferous beds at Kerguelen, 104; Well-section at Mulgundawa, 109.
Telephorus pulchellus, var. (?) *notophilus*, 116.
Thansimorpha hilaris, 119.
Thanasimus spp., 121.
Thraciopsis angustata, 103.
Thylocodes *caperatus*, 94.
Tillus dux, 118.
Trichaulus distinctus, funereus, semicostatus, 52.
Tropideres *evanescens*, 180.
Turbonilla *admiranda*, 98.
Turner, Dr. A. Jefferis, New Micro-lepidoptera, 6.
Turritella *Atkinsoni*, 95; *Hallii*, 106.
Uniformity of type among Australian Aborigines, factors producing, 176.
Xylorycta *acrochroa*, 8; *assimilis*, 7.
Xynotropis micans, 152.
Xysmatodona *lenceres*, pelochroa, *polymeres*, 18.
Yorke-Peninsula, evidences of glaciation at, 71.
Zauclophora pelodes, 8.
Zidora *Lodderæ*, 101.
Zietz, A., Description of a new species of Acanthiza, 112.
Zonops heteroleuca, 17.
Zygophyllum *humillimum*, 82.

Vardon & Pritchard, Printers, Gresham-street, Adelaide.

1. ISCHNOCHITON (Stenochiton pallens)

2. CALLOCHITON RUFUS

3. CHITON ORUKTUS

1
2
3a
3b
4a
4b
4c
5

S
E
W
N
1
2
3
4

CONTENTS.

PART II. (Issued December, 1900).

KOCH, MAX: Supplementary List of Plants from Mount Lyndhurst, S.A. - - - - - - - - 81

ASHBY, EDWIN: Definitions of Two New Species of South Australian Polyplacophora (Plate I. pars) - - - - - 86

MAUGHAN, M. M.: Definition of a New Species of South Australian Polyplacophora (Plate I. pars) - - - - - 89

TATE, PROF. RALPH, and W. L. MAY: Descriptions of New Genera and Species of Australian Mollusca (chiefly Tasmanian) - 90

TATE, PROF. RALPH: On the Occurrence of Marine Fossiliferous Rocks at Kerguelen Island (Plates II. and III.) - - - 104

TATE, PROF. RALPH: Section of a Well-bore at Mulgundawa, near Wellington, S.A. - - - - - - - 109

ZIETZ, A.: Description of a New Species of *Acanthiza* - - 112

BLACKBURN, REV. T.: Further Notes on Australian Coleoptera (XXVII.) - - - - - - - - 113

ABSTRACT OF PROCEEDINGS - - - - - - 170

ANNUAL REPORT - - - - - - - 174

BALANCE SHEET - - - - - - - 175

PRESIDENTIAL ADDRESS - - - - - - 176

DONATIONS TO LIBRARY - - - - - - 186

LIST OF FELLOWS - - - - - - - 196

PROCEEDINGS, ANNUAL REPORT, AND BALANCE SHEET OF THE FIELD NATURALISTS' SECTION - - - - - 199

PROCEEDINGS AND BALANCE SHEET OF THE ASTRONOMICAL SECTION - 204

GENERAL INDEX - - - - - - - 206